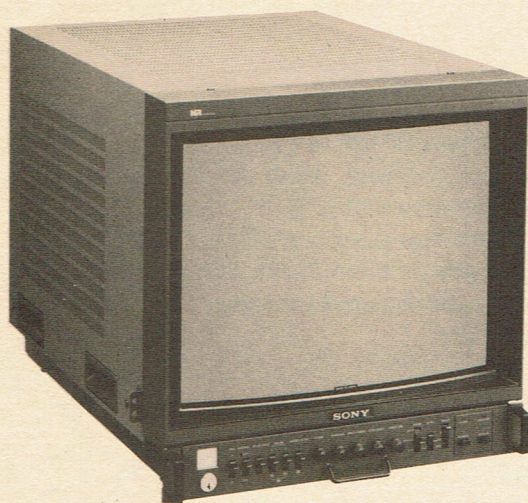


SONY[®]

TRINITRON[®] COLOR VIDEO MONITOR

BVM-2000AP



OPERATION AND MAINTENANCE MANUAL

1st Edition

Serial No. 10001 and Higher

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LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET PAR UNE MARQUE  SUR LES SCHÉMAS DE PRINCIPE, LES VUES EXPLOSÉES ET LES LISTES DE PIÈCES SONT D'UNE IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÈCE EST INDIQUÉ DANS LE PRÉSENT MANUEL OU DANS DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DE CIRCUIT DONT L'IMPORTANCE EST CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT SONT IDENTIFIÉS DANS LE PRÉSENT MANUEL. SUIVRE CES PROCÉDURES LORS DE CHAQUE REMPLACEMENT DE COMPOSANTS CRITIQUES, OU LORSQU'UN MAUVAIS FONCTIONNEMENT EST SUSPECTÉ.

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SECTION 1 OPERATION

1-1. OUTLINE

The BVM-2000AP is a color video monitor designed for use as a master monitor in broadcasting stations and production houses.

Auto set-up function ready

The auto set-up function consists of auto chroma/phase adjustment and auto white balance adjustment. Conventionally these adjustments required advanced skill and a great deal of time. The auto set-up function makes them easier and faster, with higher accuracy. For operation, it is necessary to mount the optional BKM-2050 auto set-up adaptor. For auto white balance adjustment, the optional BKM-2052 auto set-up probe should also be used.

High resolution picture

The BVM-2000AP employs a finer picture tube with a resolution approximately three times higher than the picture tube used in conventional Sony color video monitors.

Composite video inputs and R/G/B inputs

The BVM-2000AP is provided with composite video A and B inputs, TEST input and R/G/B inputs. These are selected with the INPUT selector.

Internal or external synchronization available

Internal or external synchronization is available by switching the SYNC selector.

If a composite sync signal is contained in the G-channel input signal, the monitor operates automatically with the internal sync.

Three color modes

The AUTO, COLOR and B/W modes are selectable. In AUTO mode, color or B/W mode is automatically selected by detecting the presence of color burst. In COLOR mode, the chroma circuit is activated regardless of the presence or absence of color burst. In B/W mode, the chroma circuit is deactivated and the picture is permanently displayed in black and white.

Sync signal display

When the H DELAY switch is turned on, the horizontal sync signal is displayed on the left quarter of the screen.

When the V DELAY switch is turned on, the vertical sync signal is displayed near the center of the screen, expanded by approximately three times.

When both the H and V DELAY switches are turned on, the pulse cross display is shown on the screen. At this time, vertical sync expansion can be cancelled by activating the UNDER SCAN switch.

Blue only mode

The picture can be displayed in blue only by setting the BLUE ONLY switch to ON. This facilitates color saturation adjustment and observation of VTR noise.

Chromaticity based on NTSC standard available

A picture with a chromaticity based on the NTSC standard can be displayed by setting the MATRIX switch to ON.

Sub controls in the drawer

The front control panel can be pulled out. Inside the drawer, the linearity, convergence, white balance, auto set-up and other controls are located for easy adjustment.

Tally lamp

The tally lamp displays a figure from 1 to 5 when one of the supplied number labels is inserted. The brightness can be adjusted with the TALLY BRT control on the sub control panel.

The tally lamp can be remotely turned on by short-circuiting the TALLY-REMOTE connector or supplying regulated DC power.

FAST and SLOW AFC modes

The AFC switch on the sub control panel selects the horizontal AFC time constant, FAST or SLOW. SLOW mode is used to monitor the jitter from the VTR.

Overdrive protection circuit

An overdrive protection circuit is provided to protect the picture tube from damage. The OVERDRIVE lamp lights to show activation of the circuit.

Built-in crosshatch pattern generator

When a composite video signal is applied to the VIDEO A, VIDEO B or TEST connector, or a composite sync signal is applied to the EXT SYNC connector, a crosshatch pattern synchronized to the signal can be displayed on the screen by setting the FUNCTION selector on the sub control panel to CROSSHATCH.

Use of CCD (Charge-Coupled Device)

The CCD is used in the circuit of the 1H delay line, producing less distortion than the conventional glass delay line.

EIA standard 19-inch rack mounting possible

The slide rails can be attached to the left and right sides of the monitor. This allows the monitor to be mounted in a 19-inch standard rack.

1-2. VOLTAGE SELECTION

The operating voltage of the BVM-2000AP is factory-preset to 240V AC. The voltage can be adjusted to 100V, 120V or 220V AC.

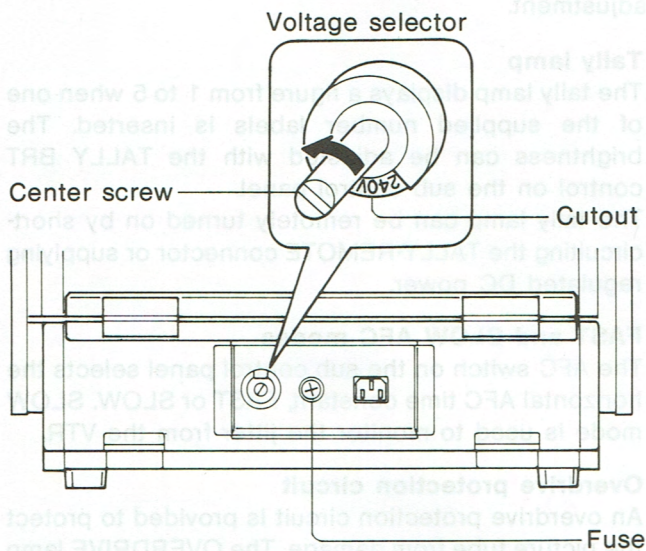
Reset the voltage selector located on the rear as follows:

Before proceeding, be sure that the ac power cord is disconnected from the ac outlet.

Remove the center screw by turning it counterclockwise with a screwdriver. Then, pull out the voltage selector and reinsert it so that the appropriate voltage figure appears at the cutout. Finally, tighten the original center screw.

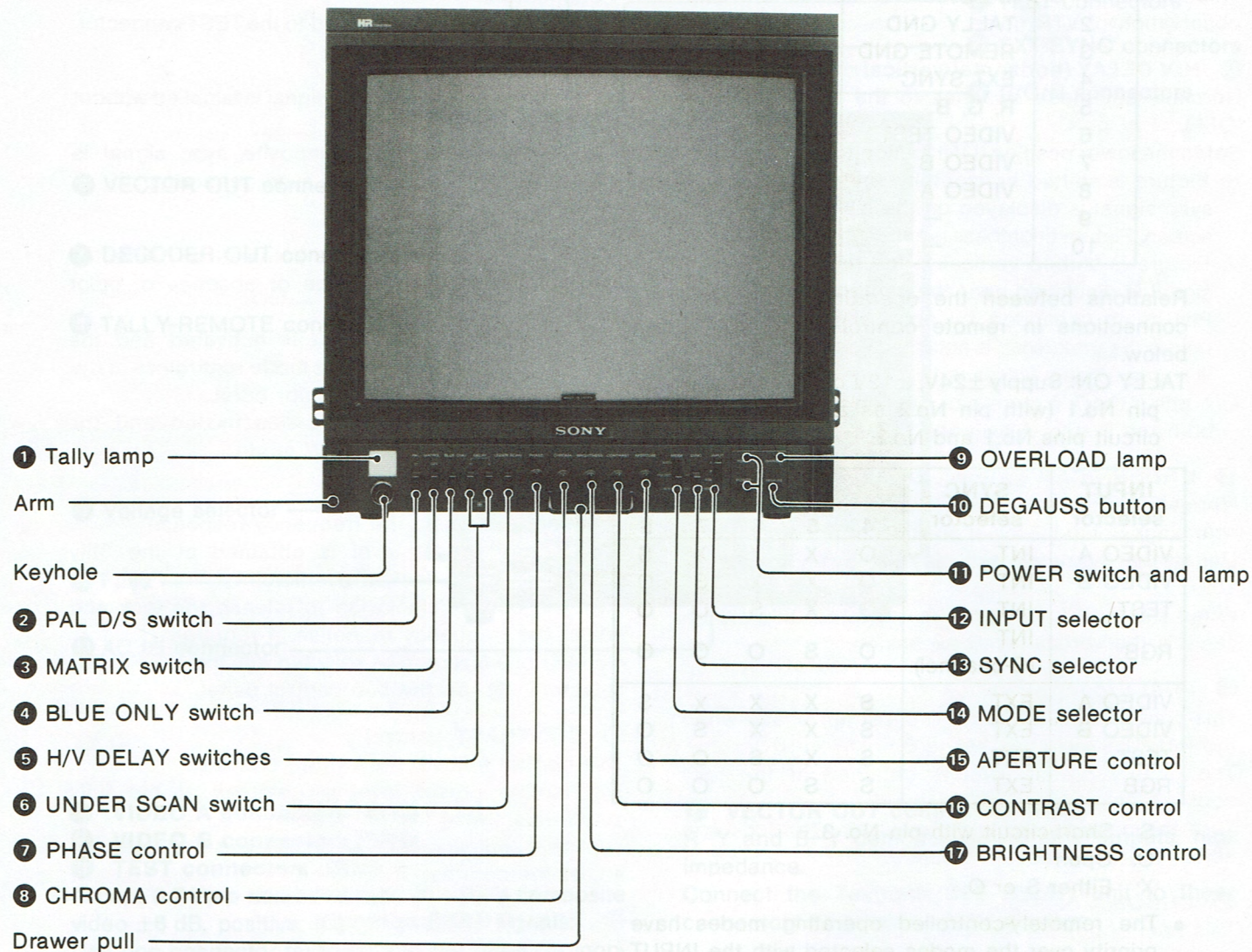
Note

Use the supplied 5A fuse for 100V or 120V setting, and a 2.5A fuse for 220V or 240V setting.



1-3. LOCATION AND FUNCTION OF CONTROLS

1-3-1. Front Panel



1 Tally lamp

Insert one of the tally number labels 1 to 5 (supplied) when the drawer is open. This lamp lights when the TALLY switch 22 on the sub control panel is set to ON. Tally lamp on/off can be remotely controlled when the TALLY switch is set to REMOTE. In remote control mode, the tally lamp lights when No. 1 and No.2 pins of the TALLY-REMOTE connector are short-circuited or supplied with regulated DC power.

2 PAL D/S (deluxe/simple) switch

This switch selects the demodulation mode, D (deluxe) or S (simple) PAL system. Normally set the switch to D.

3 MATRIX switch

Normally set this switch to the upper position (OFF). Set to the lower position (ON) to activate the matrix circuit so that the picture has a chromaticity based on the NTSC standard.

4 BLUE ONLY switch

Normally set this switch to the upper position (OFF). Set to the lower position (ON) to turn off the red and green beams. Picture will be displayed in blue only. This facilitates CHROMA control adjustment and observation of VTR noise.

5 H/V DELAY (horizontal/vertical delay) switches

Normally set these switches to the upper position (OFF). Set to the lower position (ON) to monitor sync signals. H: Picture is shifted horizontally, and the horizontal sync signal is displayed on the left quarter of the screen. Picture brightness is automatically increased. V: Picture is shifted vertically, and the vertical sync signal is displayed near the center of the screen. Picture is expanded by approximately 3 times, unless the underscan is activated. Picture brightness is automatically increased.

- A pulse cross picture can be displayed by setting both the H and V switches to ON.

6 UNDER SCAN switch

Normally set this switch to the upper position (normal scanning). Set to the lower position for underscanning. Underscanning reduces display size by approximately 10%.

When the V DELAY switch is activated, this switch cancels the vertical sync expansion.

7 PHASE control

This control adjusts the SC (subcarrier) phase when the PAL D/S switch is set to S.

The factory preset level is obtained at the fully counterclockwise locked position.

Turn the control clockwise to release the lock and adjust the SC phase, if required.

8 CHROMA control

This control adjusts the color saturation.

The factory preset level is obtained at the fully counterclockwise locked position.

Turn the control clockwise to release the lock and adjust the color saturation, if required.

9 OVERLOAD lamp (red)

This lamp lights to warn of an overload when the overdrive protection circuit is in operation.

10 DEGAUSS button

This button is used to demagnetize the screen. Depress this button for approximately 10 seconds with the power turned on.

11 POWER switch and lamp

Depress this switch to turn on the power. The POWER lamp will light.

To turn the power off, press the switch again.

12 INPUT selector

A: For the signal connected to the VIDEO A connector.
B: For the signal connected to the VIDEO B connector.
RGB: For the signals connected to the R, G and B connectors.

TEST: For the signal connected to the TEST connector.

13 SYNC selector

INT: When a composite video signal is supplied without external sync.

EXT: When an external composite sync signal is supplied from an external sync generator.

14 MODE selector

AUTO: Color or B/W mode is automatically selected according to the presence or absence of color burst.

COLOR: The chroma circuit is activated and the picture is displayed in color mode regardless of the presence or absence of color burst.

B/W: The chroma circuit is deactivated and the picture is displayed in B/W mode.

15 APERTURE control

This control adjusts the frequency response.

The factory preset level is obtained at the fully counterclockwise locked position.

Turn the control clockwise to release the lock and adjust the frequency response, if required.

4.5 MHz or 9 MHz can be selected with the APERTURE selectors 19 on the sub control panel.

16 CONTRAST control

This control adjusts the picture contrast.

The factory preset level is obtained at the fully counterclockwise locked position.

Turn the control clockwise to release the lock and adjust the contrast, if required.

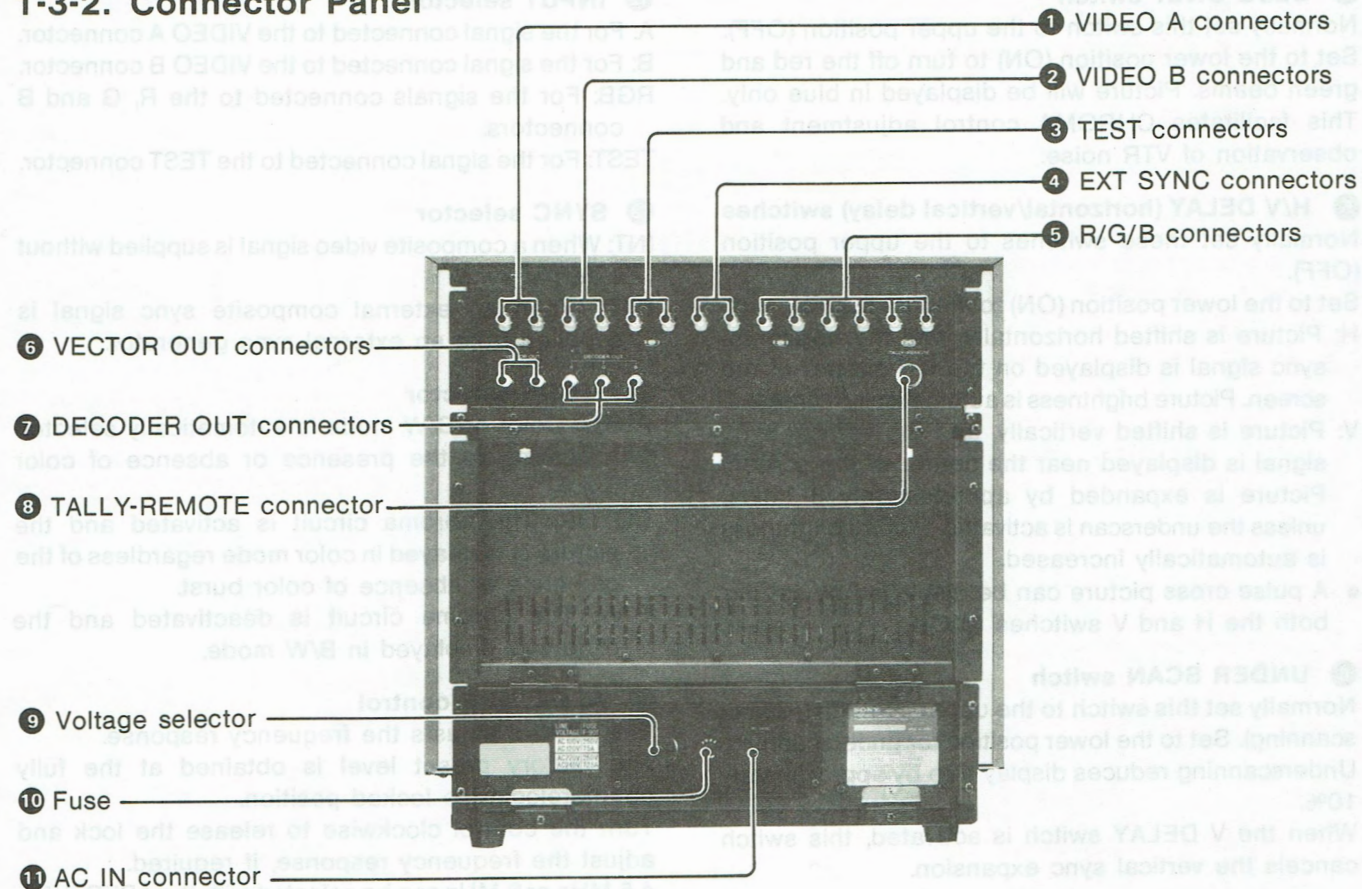
17 BRIGHTNESS control

This controls adjusts the picture brightness.

The factory preset level is obtained at the fully counterclockwise locked position.

Turn the control clockwise to release the lock and adjust the brightness, if required.

1-3-2. Connector Panel



1 VIDEO A connectors (BNC)

2 VIDEO B connectors (BNC)

3 TEST connectors (BNC)

Accept 0.7 Vp-p non-composite or 1 Vp-p composite video ± 6 dB, positive, high impedance signals.

Use one connector for input and the other for loop-through output.

4 EXT SYNC (external sync) connectors (BNC)

Accept 1 to 8 Vp-p, negative, high impedance sync signals.

Use one connector for input and the other for loop-through output.

5 R/G/B connectors (BNC)

Accept 0.7 Vp-p non-composite or 1 Vp-p composite video ± 6 dB, positive, high impedance signals.

Use one connector for input and the other for loop-through output respectively.

6 VECTOR OUT connectors (BNC)

R-Y and B-Y demodulated chroma outputs, high impedance.

Connect the Tektronix 602 display unit to these connectors to provide vector displays.

7 DECODER OUT connectors (BNC)

1 Vp-p composite video, positive, 75 ohms terminated. These connectors provide RGB outputs decoded from the signal of the VIDEO A, VIDEO B or TEST connector which is selected by the INPUT selector

12 on the front panel.

8 TALLY-REMOTE connector (10 pin)

Pin No.	Remarks
1	TALLY
2	TALLY GND
3	REMOTE GND
4	EXT SYNC
5	R, G, B
6	VIDEO TEST
7	VIDEO B
8	VIDEO A
9	—
10	—

Relations between the operating modes and pin connections in remote control mode are shown below.

TALLY ON: Supply ± 24 V, ± 12 V or $+5$ V DC power to pin No.1 (with pin No.2 as a ground), or short-circuit pins No.1 and No.2.

INPUT selector	SYNC selector	Pin No.				
		4	5	6	7	8
VIDEO A	INT	O	X	X	X	S
VIDEO B	INT	O	X	X	S	O
TEST	INT	O	X	S	O	O
RGB	INT (G-channel)	O	S	O	O	O
VIDEO A	EXT	S	X	X	X	S
VIDEO B	EXT	S	X	X	S	O
TEST	EXT	S	X	S	O	O
RGB	EXT	S	S	O	O	O

S: Short-circuit with pin No. 3.

O: Open

X: Either S or O.

- The remotely-controlled operating modes have priority over the modes selected with the INPUT and SYNC selectors on the front panel.

9 Voltage selector

Adjustable to 100V, 120V, 220V or 240V AC.

10 Fuse

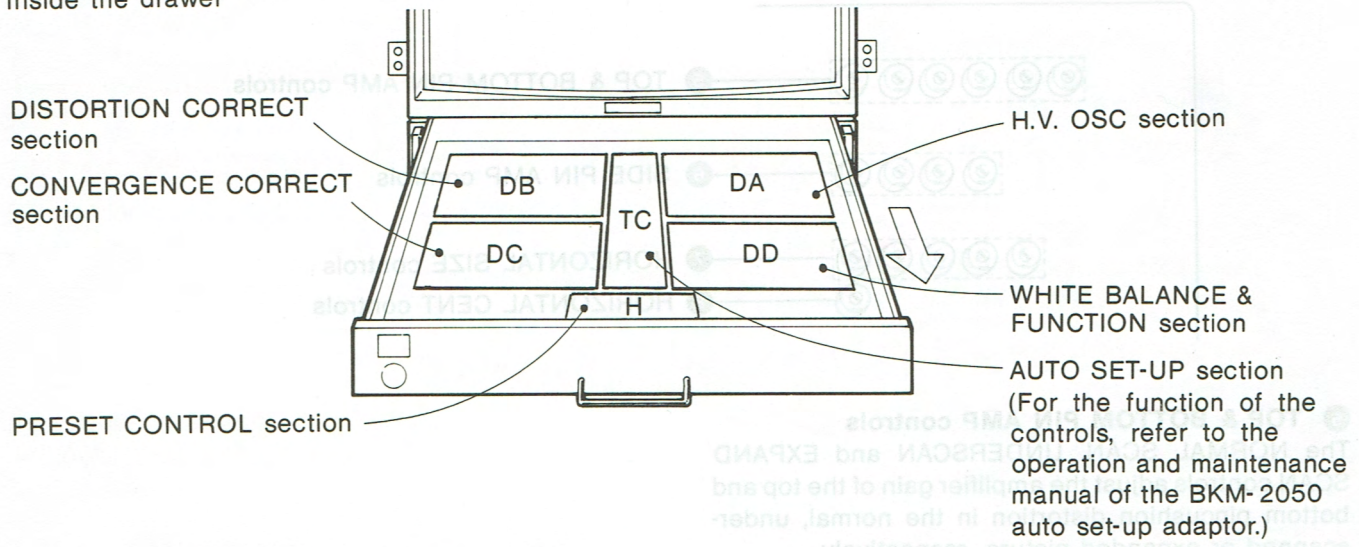
Use the supplied 5A fuse for operation on 100V or 120V AC, or the supplied 2.5A fuse for operation on 220V or 240V AC.

11 AC IN connector

Connect the supplied AC power cord here.

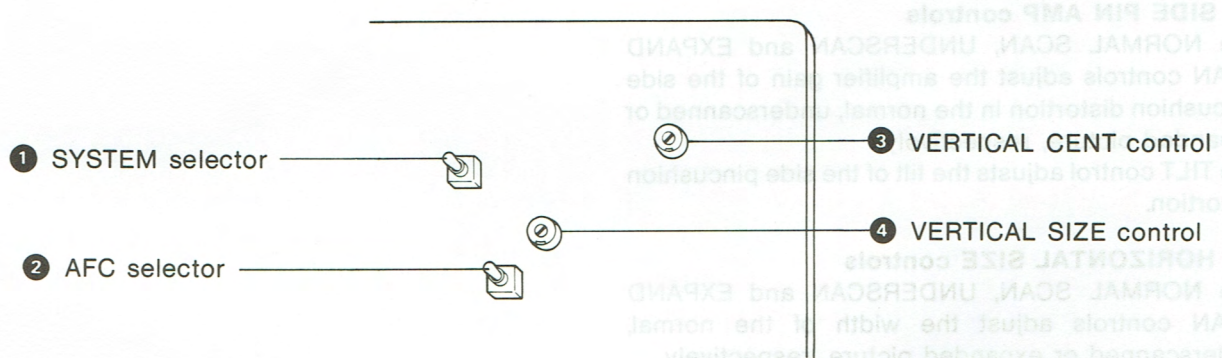
1-3-3. Sub Control Panel

Inside the drawer



Adjust the controls using the supplied screwdriver.

DA Board (H.V. OSC section)



① **SYSTEM selector**

Set the selector to 50 Hz (for PAL signal) or 60 Hz (for NTSC signal) according to the vertical scanning lines of the input signal.
Normally set the selector to 50 Hz.

② **AFC (automatic frequency control) selector**

FAST: AFC operation is performed in fast mode. In this mode, incoming sync timing errors are almost all corrected.

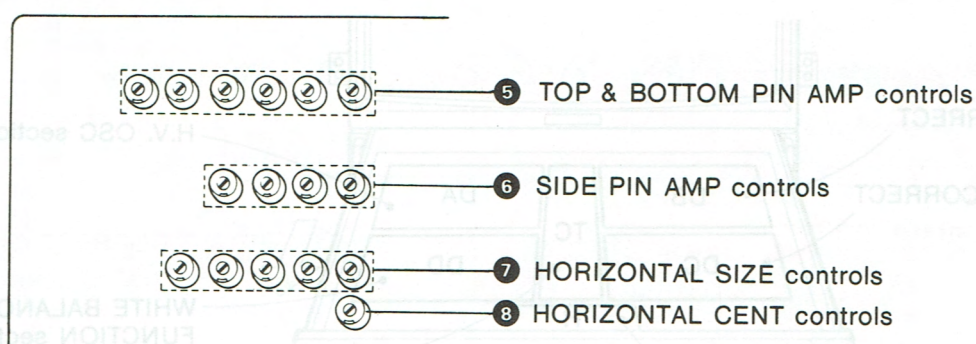
SLOW: AFC operation is performed in slow mode, and incoming sync timing errors are displayed on the screen.

③ **VERTICAL CENT (centering) control**

This control adjusts the vertical position of the picture.

④ **VERTICAL SIZE control**

This control adjusts the height of the picture.

DB Board (DISTORTION CORRECT section)**5 TOP & BOTTOM PIN AMP controls**

The NORMAL SCAN, UNDERSCAN and EXPAND SCAN controls adjust the amplifier gain of the top and bottom pincushion distortion in the normal, under-scanned or expanded picture, respectively.

The PHASE control adjusts the phase of the top and bottom pincushion distortion.

The BALANCE control adjusts the vertical balance of the top and bottom pincushion distortion.

The PARALLEL control adjusts the rhombic compensation of the top and bottom distortion.

6 SIDE PIN AMP controls

The NORMAL SCAN, UNDERSCAN and EXPAND SCAN controls adjust the amplifier gain of the side pincushion distortion in the normal, underscanned or expanded picture, respectively.

The TILT control adjusts the tilt of the side pincushion distortion.

7 HORIZONTAL SIZE controls

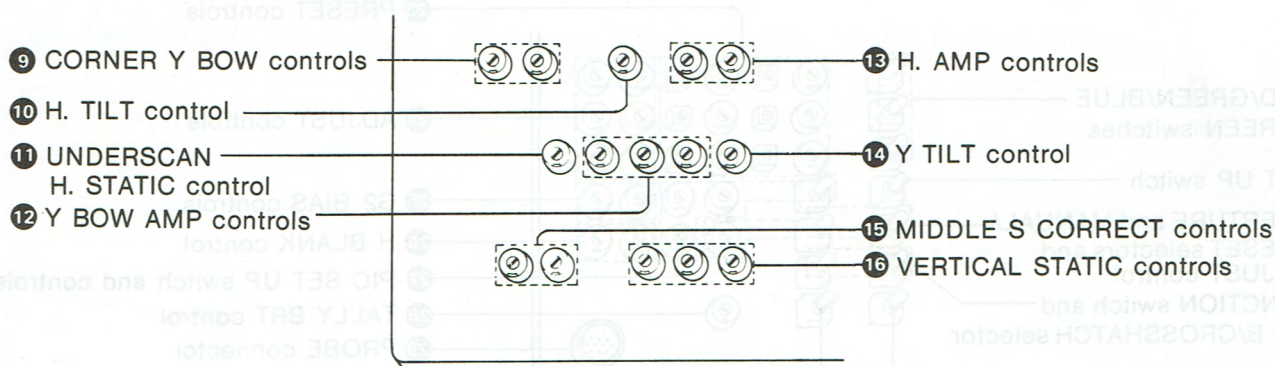
The NORMAL SCAN, UNDERSCAN and EXPAND SCAN controls adjust the width of the normal, underscanned or expanded picture, respectively.

The BOW control adjusts the horizontal balance of the horizontal pincushion distortion.

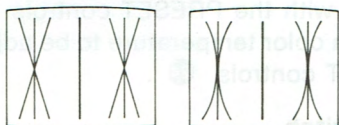
The LIN control adjusts the horizontal linearity.

8 HORIZONTAL CENT (centering) control

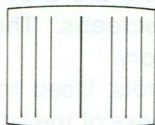
This control adjusts the horizontal position of the picture.

DC Board (CONVERGENCE CORRECT section)**9 CORNER Y BOW controls**

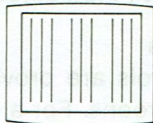
These controls adjust the horizontal convergence at the corners of the screen. Adjust the BALANCE control to achieve balance between bows, then adjust the AMP control.

**10 H. TILT (horizontal tilt) control**

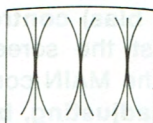
This control adjusts the horizontal convergence at both sides of the screen.

**11 UNDERSCAN H. STATIC (horizontal static) control**

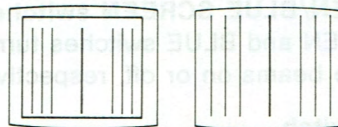
This control adjusts the horizontal convergence at the center of the underscanned picture.

**12 Y BOW AMP control**

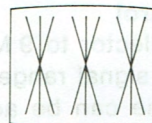
The NORMAL SCAN, UNDERSCAN and EXPAND SCAN controls adjust the amplifier gain of the horizontal convergence at the top and bottom of the normal, underscanned or expanded picture, respectively.

**13 H. AMP (horizontal amplifier) controls**

The UNDERSCAN and NORMAL SCAN controls adjust the amplifier gain of the horizontal convergence.

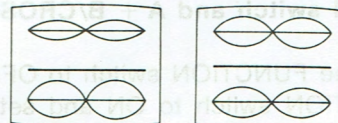
**14 Y TILT control**

This control adjusts the horizontal convergence at the top and bottom of the screen.

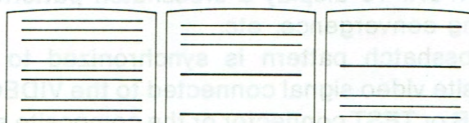
**15 MIDDLE S CORRECT controls**

These controls adjust the vertical convergence at the middle of the lower and upper portions of the screen to correct S-shaped distortion.

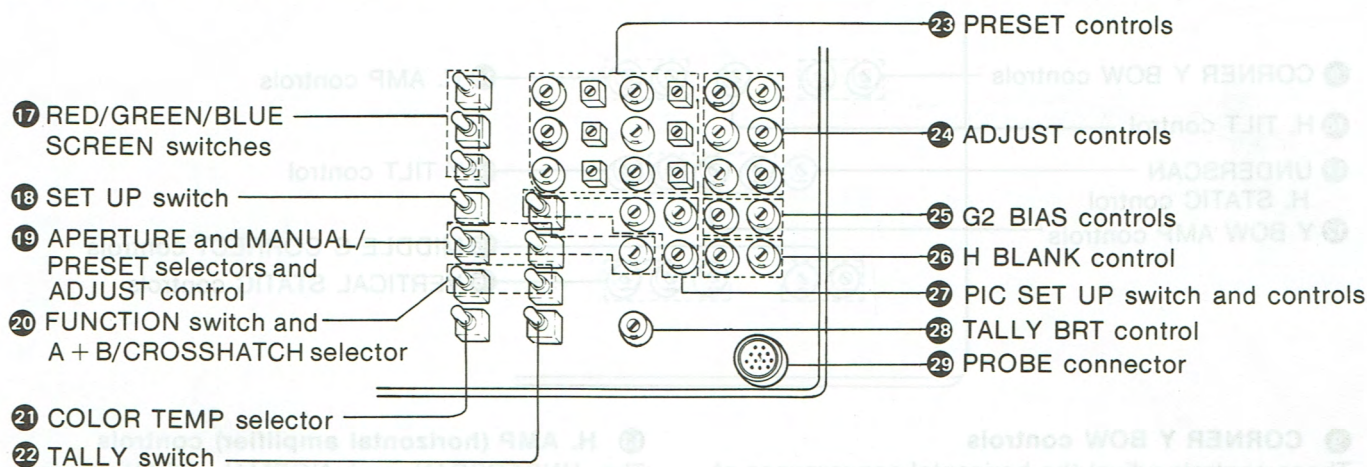
Adjust the BALANCE control so that the S-shapes are similar.

**16 VERTICAL STATIC controls**

These controls adjust the vertical convergence. Adjust 1.CENTER control to achieve convergence at the center of the screen. Then, adjust 2.TOP control for convergence at the top and 3.BOTTOM control for convergence at the bottom.



DD Board (WHITE BALANCE & FUNCTION section)



17 RED/GREEN/BLUE SCREEN switches

The RED, GREEN and BLUE switches turn the red, green and blue beams on or off, respectively.

18 SET UP switch

When this switch is set to ON, a horizontal white bar is displayed on the screen for adjusting the white balance and brightness at the cut-off level.

19 APERTURE and MANUAL/PRESET selectors and ADJUST control

Set the APERTURE selector to 9 MHz or 4.5 MHz, according to the input signal range.

The frequency response can be adjusted with the APERTURE control 15 on the front. (When the selector is set to 9 MHz, the MANUAL/PRESET selector should be set to MANUAL.)

Use the ADJUST control to adjust the frequency response to MTF flat when the APERTURE selector is set to 9 MHz and the MANUAL/PRESET selector to PRESET.

20 FUNCTION switch and A + B/CROSSHATCH selector

Normally set the FUNCTION switch to OFF.

Set the FUNCTION switch to ON and set the A + B/CROSSHATCH selector to the appropriate position to display the A + B picture or the crosshatch pattern.

A + B: To display the signals connected to the VIDEO A and VIDEO B connectors simultaneously for observing the phase, etc. The picture is synchronized to the signal selected with the INPUT selector 12 on the front.

CROSSHATCH: To display a crosshatch pattern for adjusting convergence, etc.

The crosshatch pattern is synchronized to the composite video signal connected to the VIDEO A, VIDEO B or TEST connector or the composite sync signal connected to the EXT SYNC connector.

- Make sure that the INPUT selector is not set to RGB.

21 COLOR TEMP (color temperature) selector

PRESET: For the color temperature preadjusted at the factory with the PRESET controls 23.

ADJUST: For a color temperature to be adjusted with the ADJUST controls 24.

22 TALLY switch

ON: The tally lamp 1 on the front lights.

REMOTE: Tally lamp on/off can be remotely controlled.

23 PRESET controls

BIAS and GAIN controls are provided for the RED, GREEN and BLUE screens. These controls are preadjusted at the factory.

BIAS MAIN/SUB controls: Used to adjust the white balance and brightness of the screen at the cut-off level.

GAIN MAIN/SUB controls: Used to adjust the white balance and brightness of the screen at the white peak.

First set the COLOR TEMP selector 21 to PRESET, adjust the MAIN control, then adjust the SUB control.

24 ADJUST controls

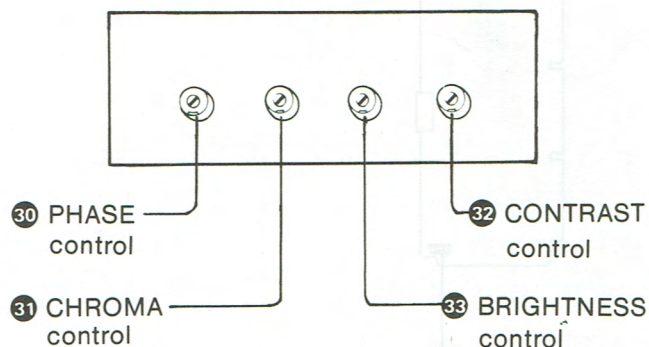
BIAS and GAIN controls are provided for the RED, GREEN and BLUE screens. For a color temperature other than that set by the PRESET controls, set the COLOR TEMP selector 21 to ADJUST and adjust these controls.

BIAS controls: Used to adjust the white balance and brightness of the screen at the cut-off level.

GAIN controls: Used to adjust the white balance and brightness of the screen at the white peak.

25 G2 BIAS (grid 2 bias) controls

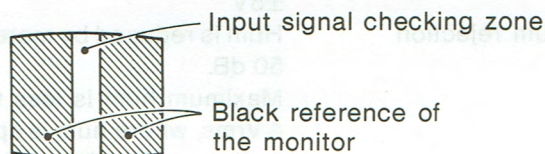
These controls adjust the screen voltage of the picture tube. Adjust the MAIN control first, then the SUB control. **Before adjusting, be sure to refer to "Bias adjustment" in Section 4.**

H board (PRESET CONTROL section)**26 H BLANK (horizontal blanking) controls**

The PHASE control adjusts the phase of the horizontal blanking. The WIDTH control adjusts the width of the horizontal blanking.

27 PIC SET UP (picture set up) switch and controls

When this switch is set to ON, a vertical picture band and the black reference of the monitor are displayed on the screen for adjusting the black reference of the monitor to the input signal level.



The function of the RGB SET, COMP SET and PIC SET POSITION controls is as follows:

RGB SET control: Used to adjust the black reference of the monitor when RGB signals are supplied.

COMP SET (composite signal set) control: Used to adjust the black reference when composite video signals are supplied.

PIC SET POSITION control: Used to adjust the horizontal position of the vertical picture band.

Adjust the horizontal position of the vertical picture band with the PIC SET POSITION control to locate the black signal of the picture next to the black reference area, and then turn the RGB SET or COMP SET control so that the brightness of the black reference area is the same as that of the picture signal level.

28 TALLY BRT (tally brightness) control

This control adjusts the brightness of the tally lamp.

29 PROBE connector (12 pin)

Connect the BKM-2052 auto set-up probe here.

30 PHASE control

Preset the subcarrier phase obtained when the PHASE control on the front is turned fully counterclockwise.

31 CHROMA control

Preset the color saturation level obtained when the CHROMA control on the front is turned fully counterclockwise.

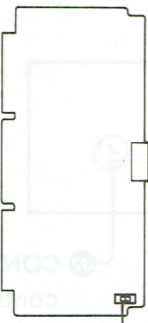
32 CONTRAST control

Preset the contrast level obtained when the CONTRAST control on the front is turned fully counterclockwise.

33 BRIGHTNESS control

Preset the brightness level obtained when the BRIGHTNESS control on the front is turned fully counterclockwise.

1-3-4. BD Board



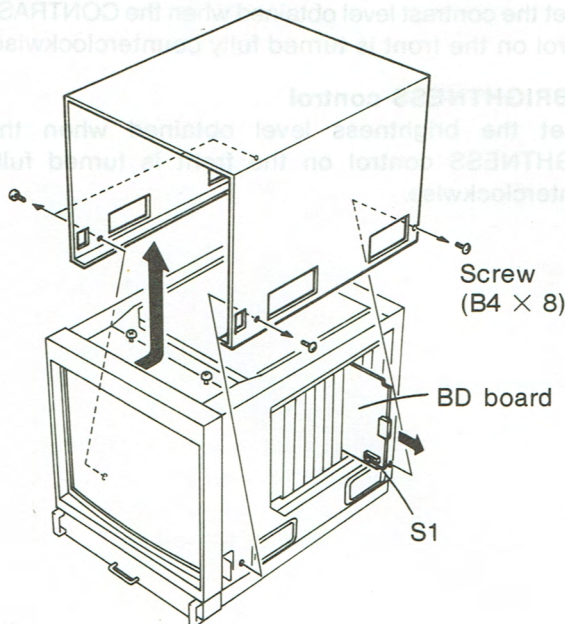
Residual subcarrier switch (S1)

Residual subcarrier switch (S1)

This switch is factory-preset to OFF. Normally there will not be residual subcarrier in input video signals. However, if a residual subcarrier is present, this may affect the display. Set this switch to ON to check if residual subcarrier is present. If a residual subcarrier is present in the incoming signal, color shift appears on the picture.

To expose the BD board

Remove the cabinet as illustrated.



1-4. SPECIFICATIONS

System	625 lines per picture, 50 fields per second interlaced, PAL Super Fine Pitch Trinitron
CRT	0.3 mm aperture grill, 90-degree deflection, $\phi 36$ mm in-line gun
	Effective picture size: 291 × 384 mm (h/w) (11½ × 15⅛ inches)
	482 mm (19 inches) picture measured diagonally

Input and output

Video	R/G/B: BNC connector (6) VIDEO A/B: BNC connector (4) TEST: BNC connector (2) 0.7 Vp-p non-composite or 1 Vp-p composite video signal ± 6 dB positive, high impedance with loop-through output
Sync	EXT SYNC: BNC connector (2) 1 to 8 Vp-p negative, high impedance with loop-through output
Return loss	More than 46 dB (7 MHz with 75 ohm termination)
Maximum safe input DC	± 5 V
Hum rejection	Hum is reduced by more than 50 dB. Maximum hum is less than 4 Vrms, where hum is applied to the monitor in floating ground mode.
Vector output	VECTOR OUT: BNC connector (2)
Decoder output	DECODE OUT: BNC connector (3)
Tally-remote connector	TALLY-REMOTE: 10-pin connector

Video signal

Luminance channel (RGB and composite signals)	
Differential gain	Within 2% for a luminance from 0 to 30 fL
Differential phase	Within 2° for a luminance from 0 to 30 fL
Frequency response	Monochrome mode: 100 Hz to 10 MHz ± 1 dB (aperture correction at 0) Color mode: Notch filter removes frequency in 4.43 MHz region

Chrominance channel	
Demodulation axis	R-Y, B-Y
Bandpass	1.3 MHz equiband
Subcarrier regeneration	$\pm 1^\circ$ (standard input signal)
Phase range	More than $\pm 10^\circ$ (standard input signal)
Color range	More than ± 6 dB
Chrominance/luminance	
Time error	Less than 40 nsec
Gain error	Less than 5 %
Aperture correction	Adjustable continuously up to 8 dB boost at 4.5 MHz or 9 MHz (selectable)
DC restoration (RGB and composite signals)	
	Back porch type
	Back porch level: Within 1 % of peak luminance, 10 % to 90 % APL (average picture level)

Synchronization

AFC	Slow: Weighting factor is more than 5 (2 Hz to 100 Hz) Fast: Weighting factor is less than 1 (2 Hz) 2 (10 Hz) 3 (500 Hz) 4 (10 kHz)
Line pull range/line hold range	More than ± 500 Hz at fast time constant
Vertical blanking time	Normal: Within 1 msec. Underscan: Within 0.8 msec.
Horizontal retrace time	Within 10 μ sec.

Picture performance

Normal scan	291 \times 384 mm (h/w) (11 1/2 \times 15 1/8 inches)
Underscan	Approximately 10 % reduction
Linearity	Within a central area bounded by a circle whose diameter equals the picture height, within 1 % of the picture height
Color temperature	6,500°K, adjustable to other color temperatures
Nominal chromaticity coordinates	EBU standard phosphor

	X	Y
Red	0.64	0.33
Green	0.29	0.60
Blue	0.15	0.06

Error: Less than ± 0.005

Convergence error	Central area: Less than 0.5 mm Periphery: Less than 1 mm
Calibrated contrast	30 fL at peak white of standard 1 Vp-p signal
Raster size stability	Less than 1% picture height, 0 % to 100 % APL at 30 fL peak luminance
Scan delay	Horizontal: Approx. 1/4 line Vertical: Approx. 1/2 field Vertical scan is expanded unless underscan is activated.
Resolution	More than 900 TV lines (center, at 30 fL luminance)

Environment

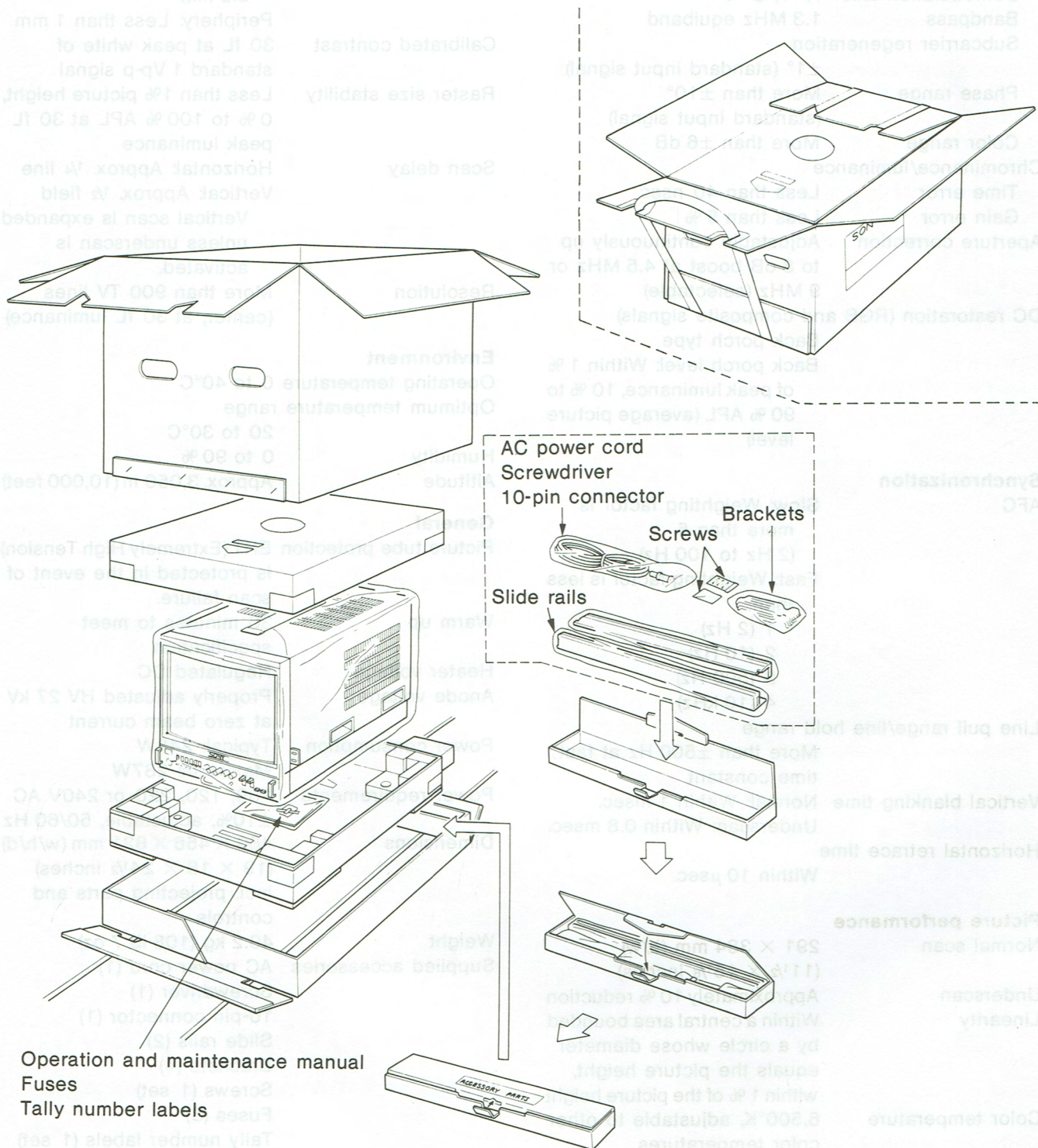
Operating temperature	0 to 40°C
Optimum temperature range	20 to 30°C
Humidity	0 to 90 %
Altitude	Approx. 3,050 m (10,000 feet)

General

Picture tube protection	EHT (Extremely High Tension) is protected in the event of scan failure.
Warm up	30 minutes to meet specification
Heater voltage	Regulated DC
Anode voltage	Properly adjusted HV 27 kV at zero beam current
Power consumption	Typical: 248W Maximum: 287W
Power requirements	100, 120, 220 or 240V AC $\pm 10\%$, adjustable, 50/60 Hz
Dimensions	480 \times 456 \times 621 mm (w/h/d) (19 \times 18 \times 24 1/2 inches) incl. projecting parts and controls
Weight	49.2 kg (108 lb 7 oz)
Supplied accessories	AC power cord (1) Screwdriver (1) 10-pin connector (1) Slide rails (2) Brackets (4) Screws (1 set) Fuses (3) Tally number labels (1 set) Operation and maintenance manual (1)

Design and specifications subject to change without
notice.

1-5. PACKING

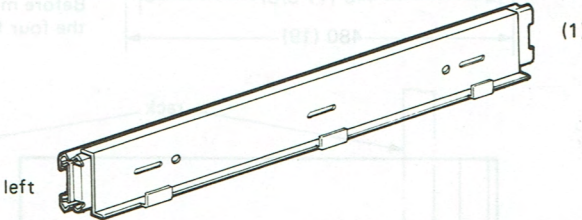
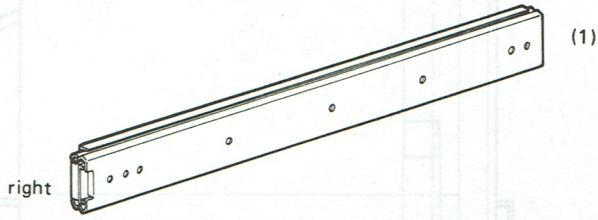
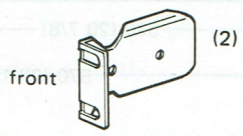
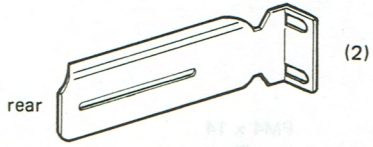







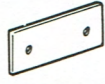



SECTION 2 DISASSEMBLY

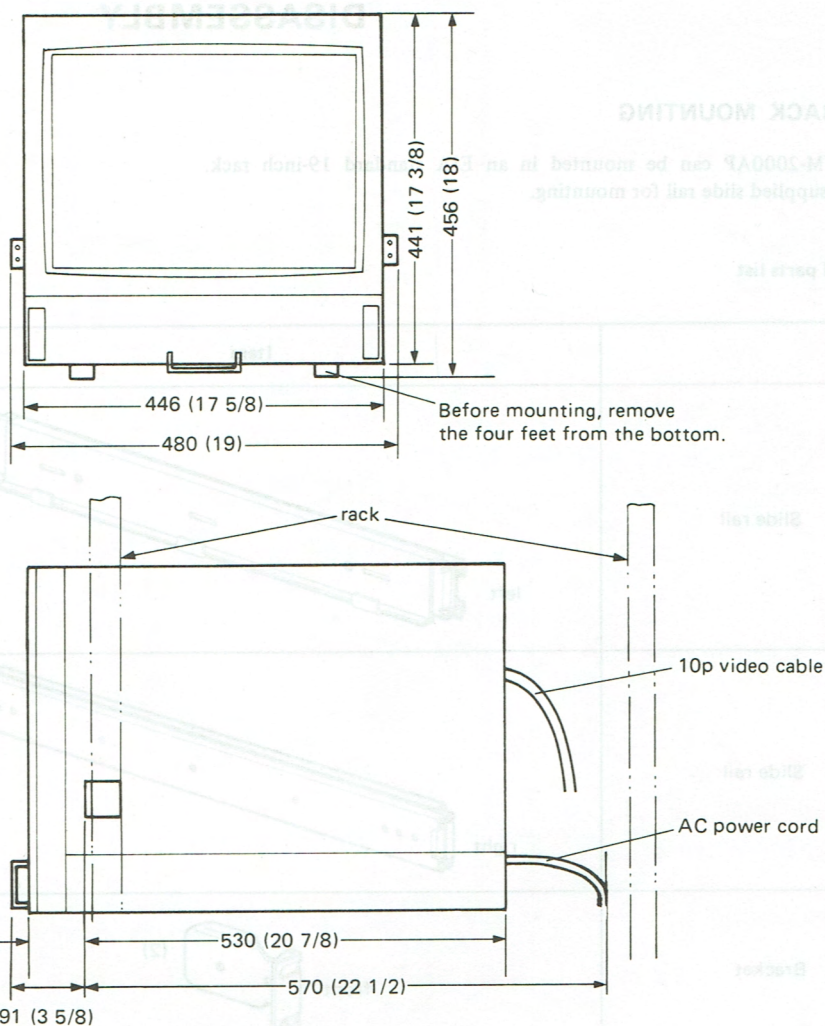
2-1. RACK MOUNTING

The BVM-2000AP can be mounted in an EIA standard 19-inch rack.
Use the supplied slide rail for mounting.

Slide rail parts list

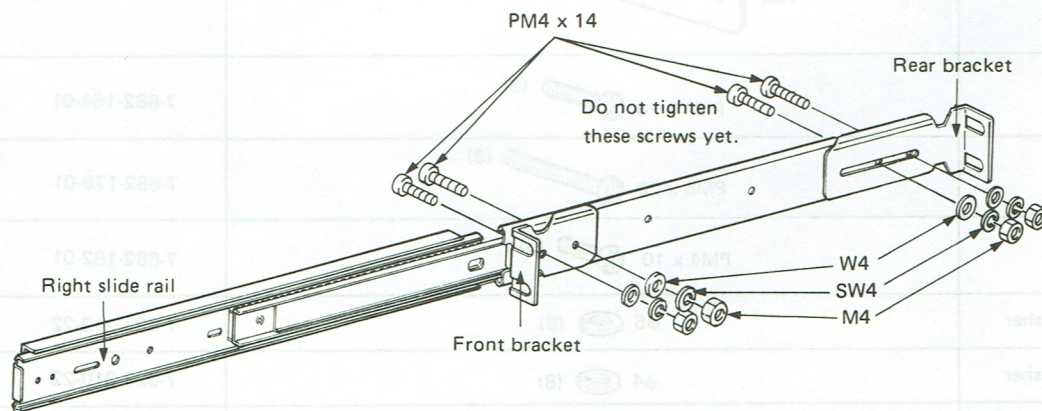
	Item	part number
Slide rail	 (1) left	X-4353-701-1
Slide rail	 (1) right	X-4353-701-2
Bracket	 (2) front	4-353-742-01
Bracket	 (2) rear	4-353-743-01
Screw	PM4 x 14  (8)	7-682-164-01
Screw	PM5 x 20  (8)	7-682-179-01
Screw	PM4 x 10  (6)	7-682-162-01
Split lock washer	$\phi 5$  (8)	7-623-212-22
Split lock washer	$\phi 4$  (8)	7-623-210-22
Washer	$\phi 5$  (8)	7-688-005-01
Washer	$\phi 4$  (8)	7-688-004-11
Plate nut	 (4)	4-337-214-01
Hex nut	M4  (8)	7-684-024-04

Dimensions

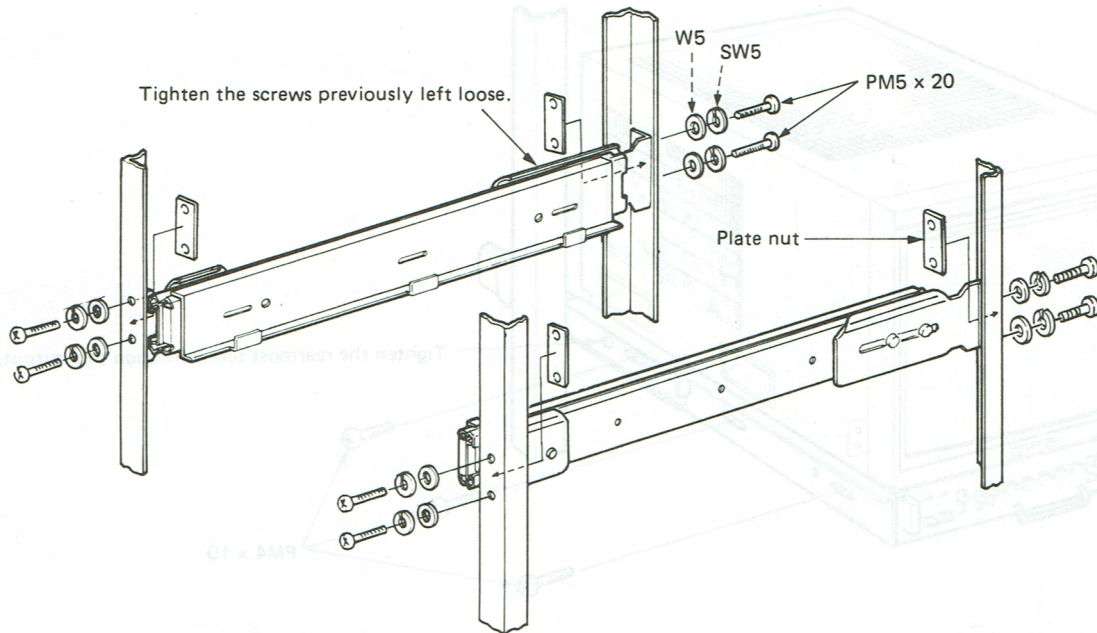


unit: mm (inches)

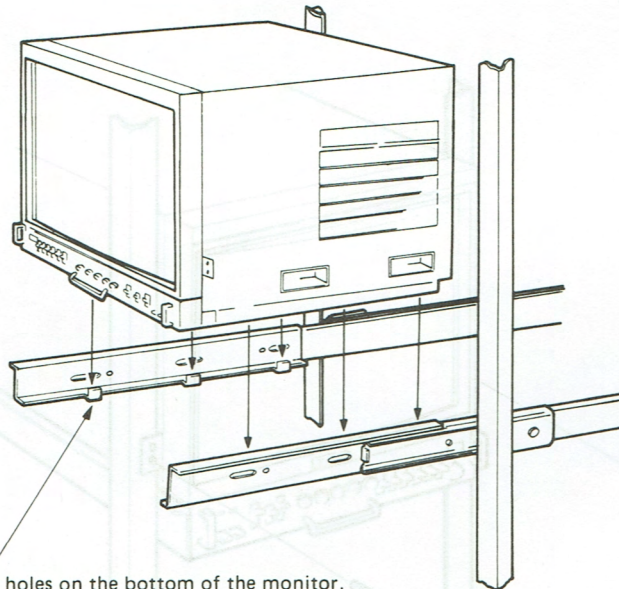
1. Attach the brackets to both ends of the slide rails.



2. Secure the slide rails to the rack.



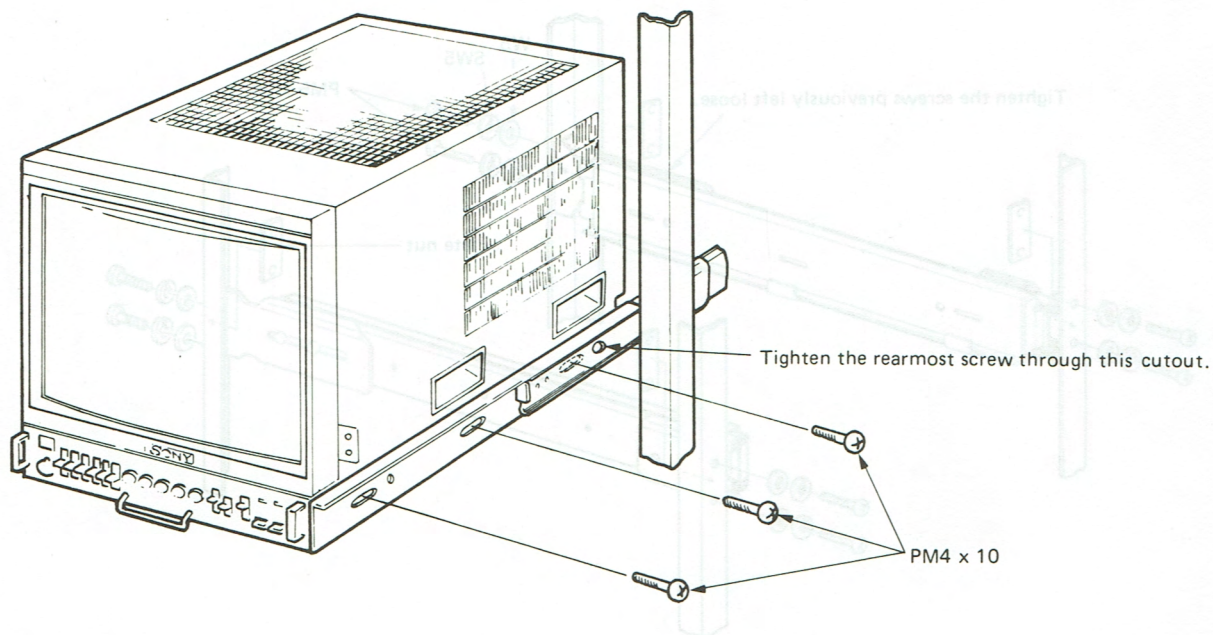
3. Pull out the slide rails and put the monitor on the rails.



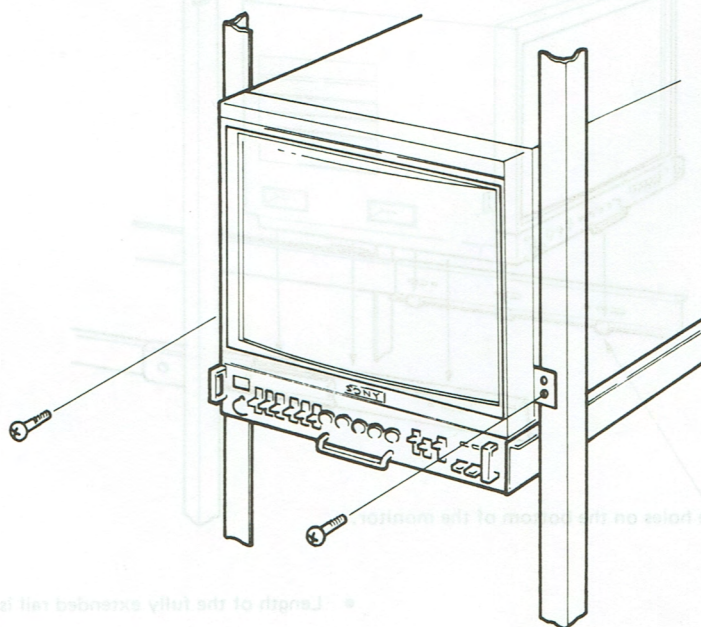
Fit these projections into the holes on the bottom of the monitor.

- Length of the fully extended rail is approximately 530 mm (20 7/8 inches)

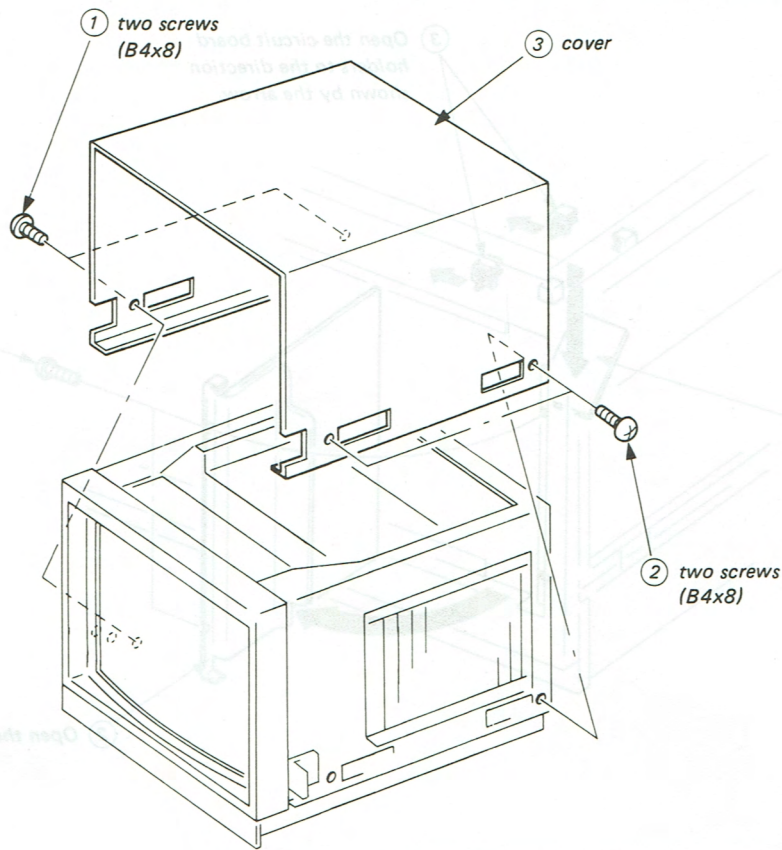
2. DISASSEMBLY
4. Secure the slide rails to the both sides of the monitors.



5. Push the monitor all the way into the rack and secure the lugs on both sides of the monitor to the rack.

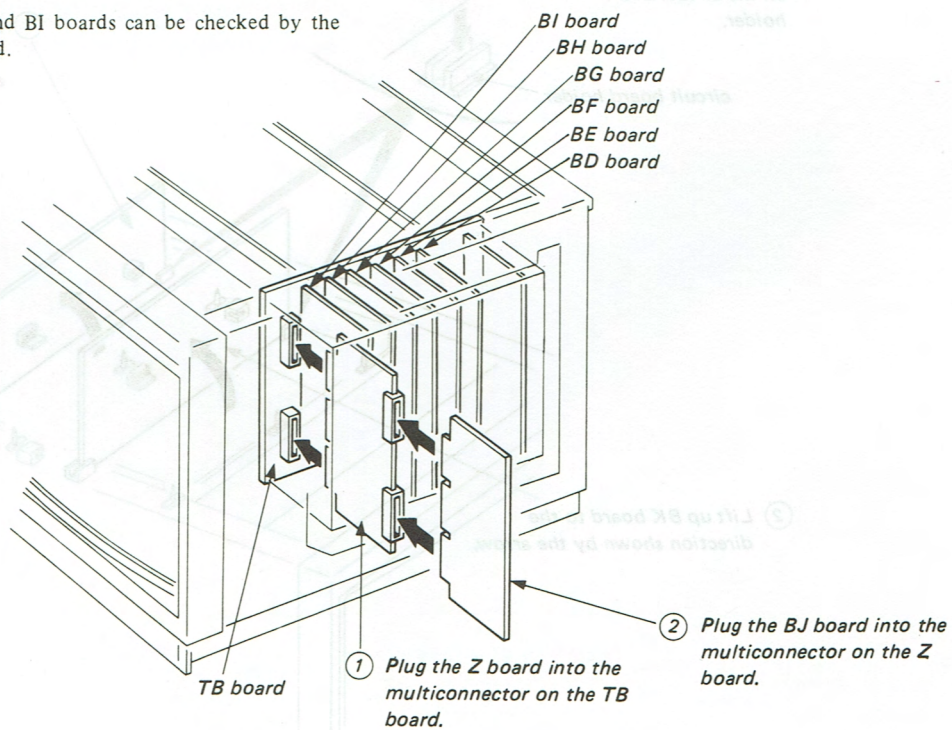


2-2. COVER REMOVAL

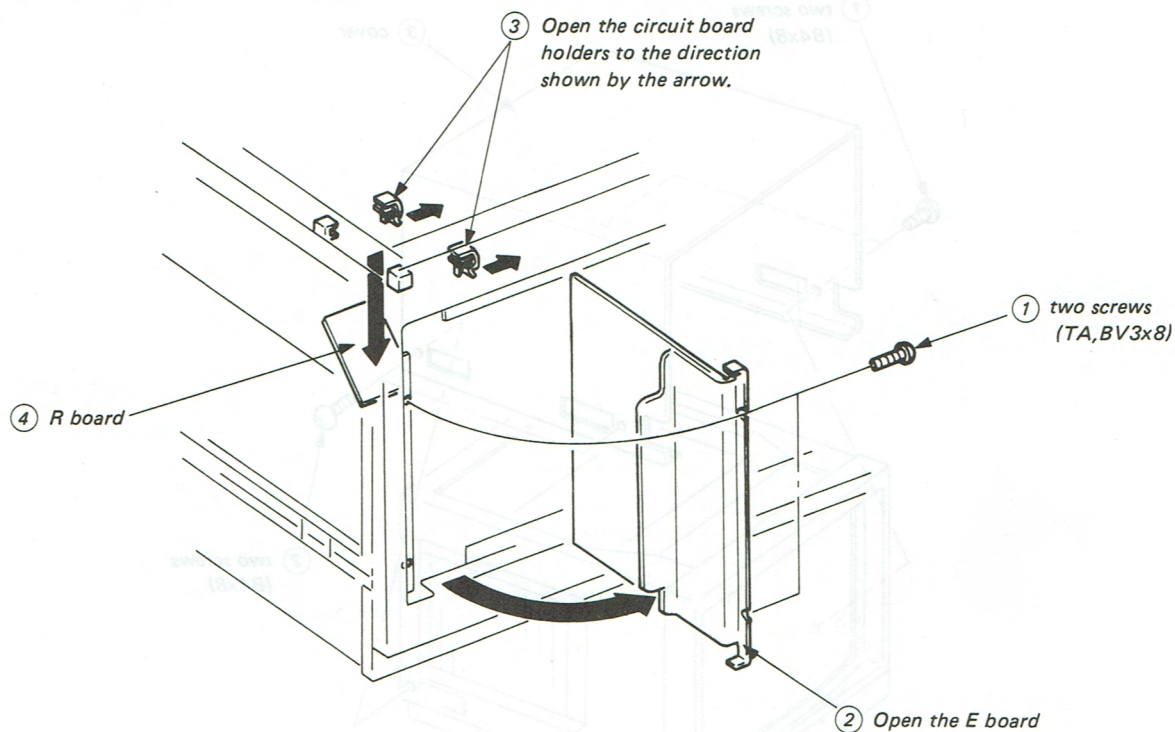


2-3. CHECK OF BD, BE, BF, BG, BH, BI AND BJ BOARDS

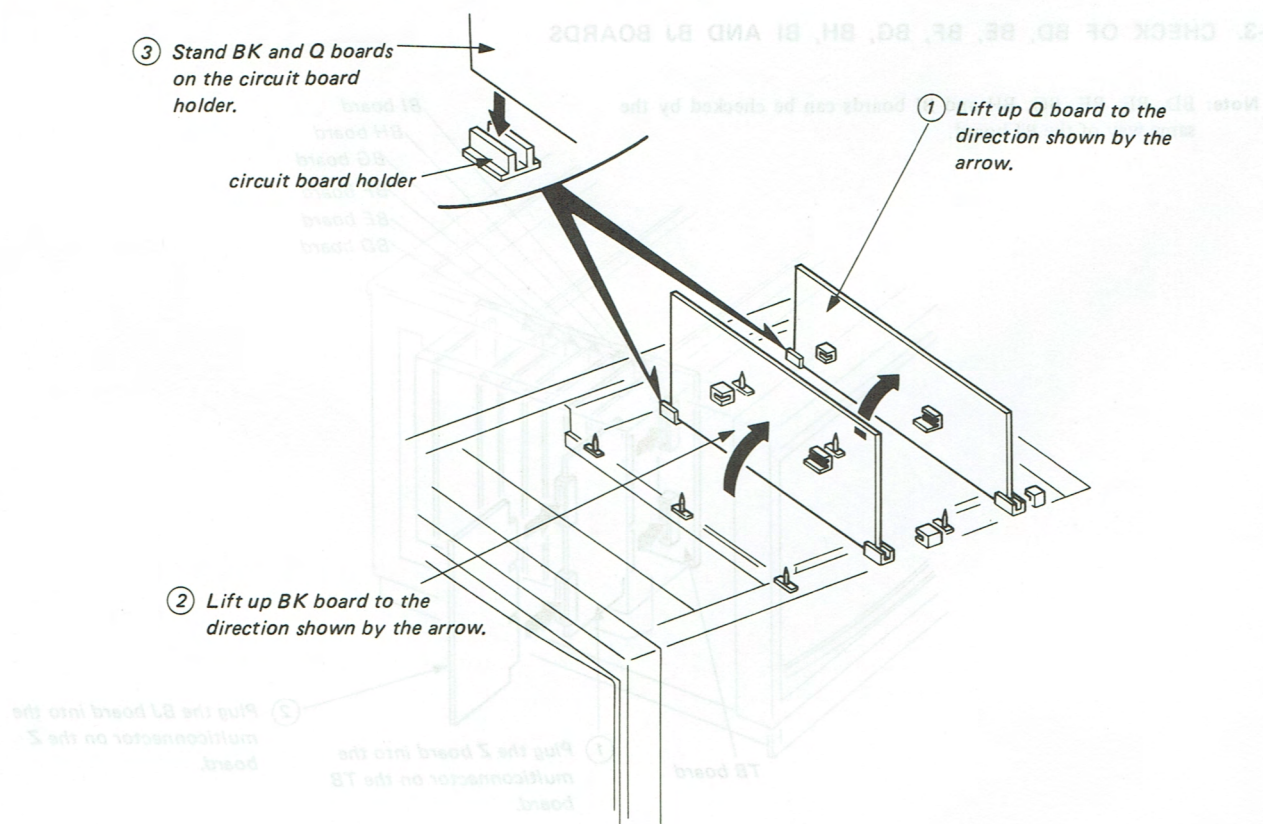
Note: BD, BE, BF, BG, BH and BI boards can be checked by the same way of the BJ board.



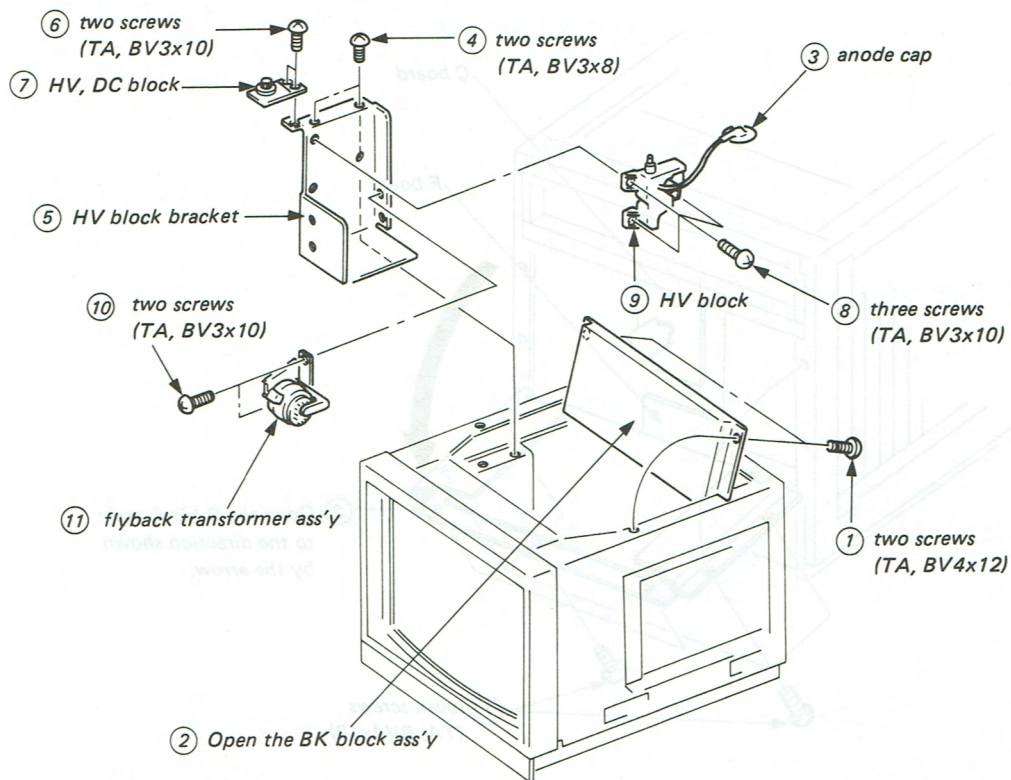
2.4. R BOARD REMOVAL (FOR CHECKING IT UP)



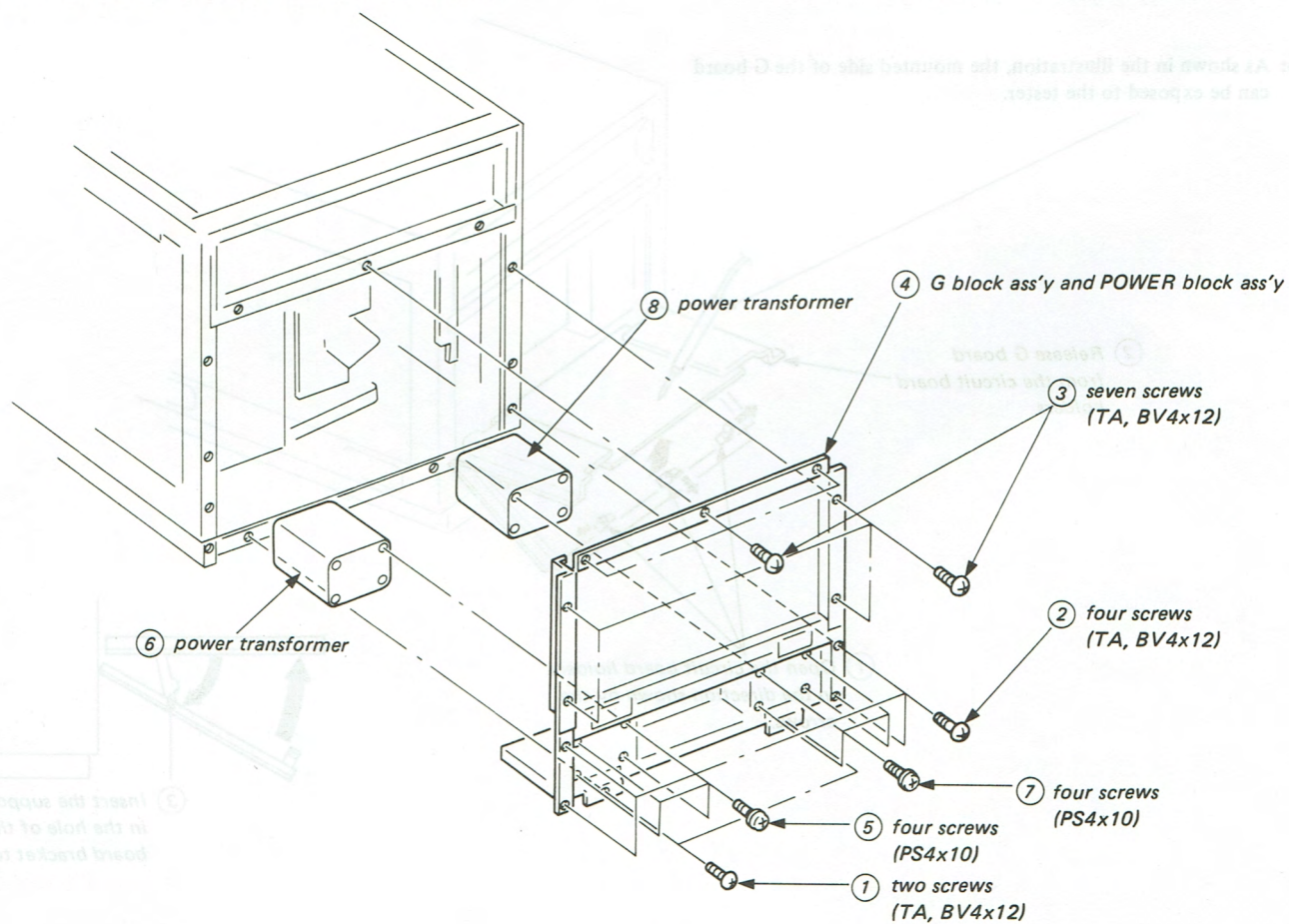
2.5. BK AND Q BOARDS REMOVAL (FOR CHECKING THEM UP)



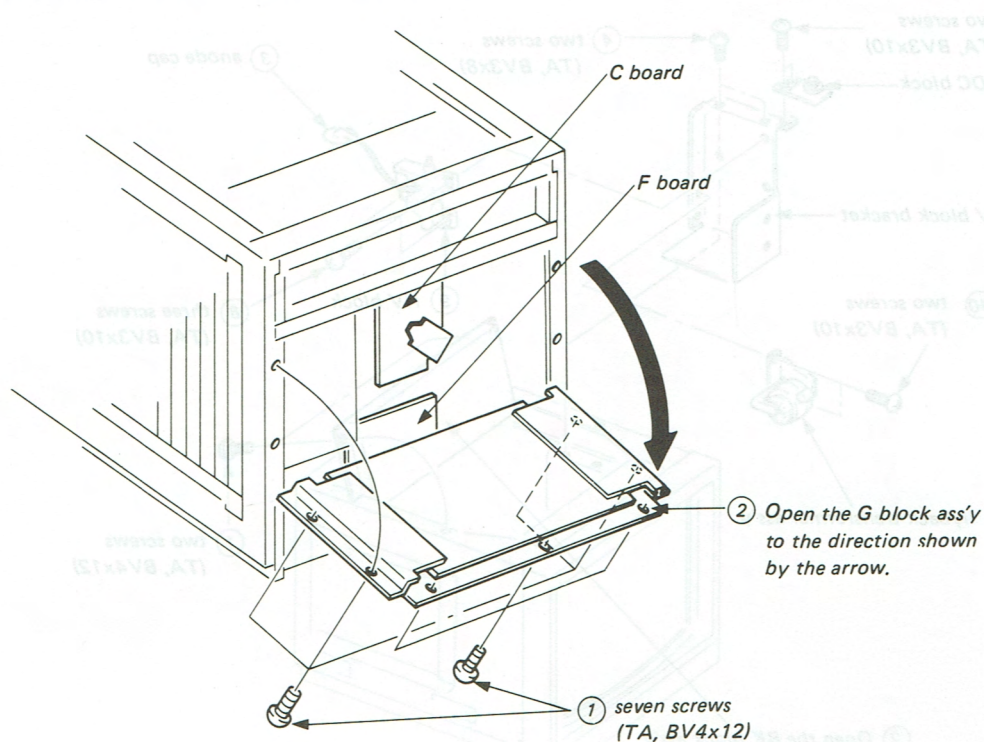
2-6. FLYBACK TRANSFORMER ASS'Y AND HV BLOCK REMOVAL



2-7. POWER TRANSFORMER REMOVAL

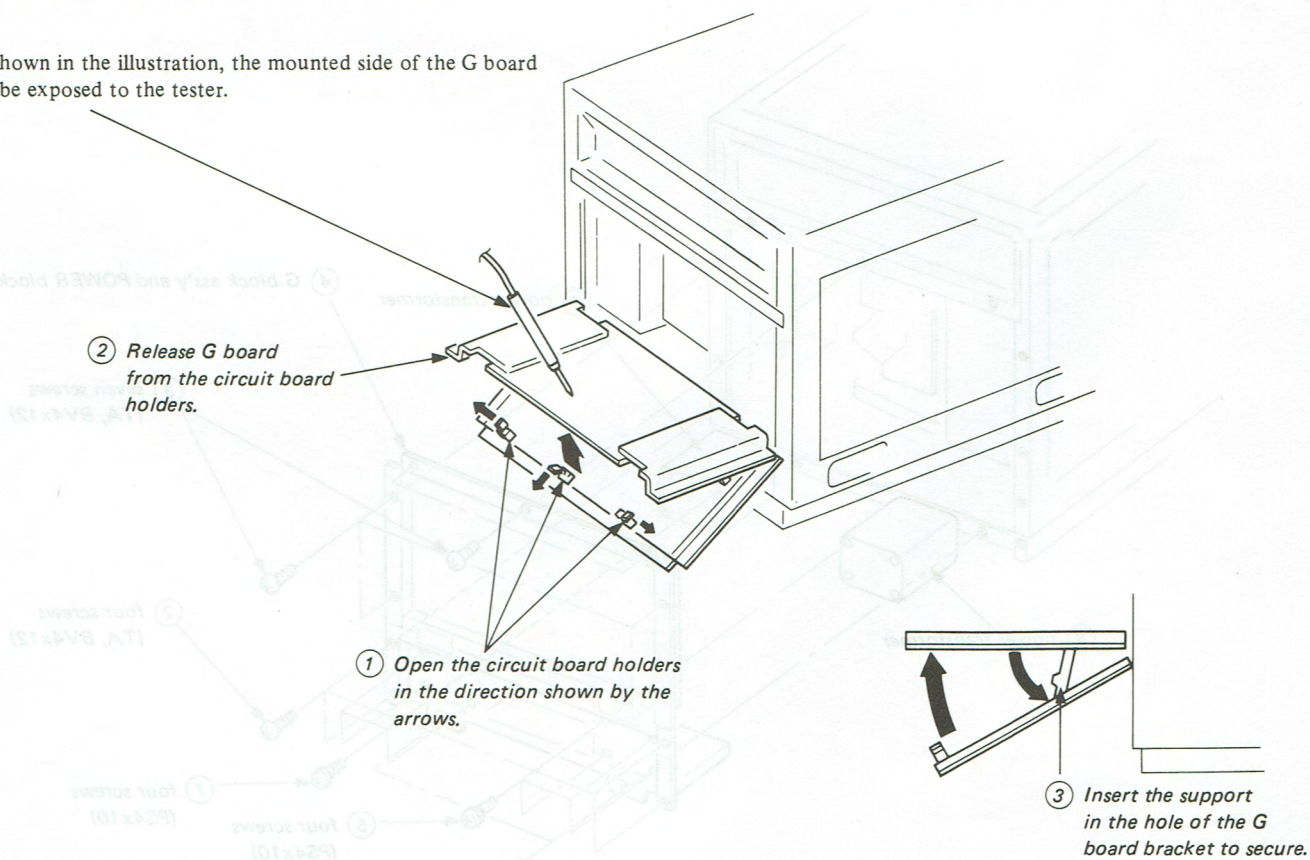


2-8. FOR CHECKING C BOARD AND F BOARD UP

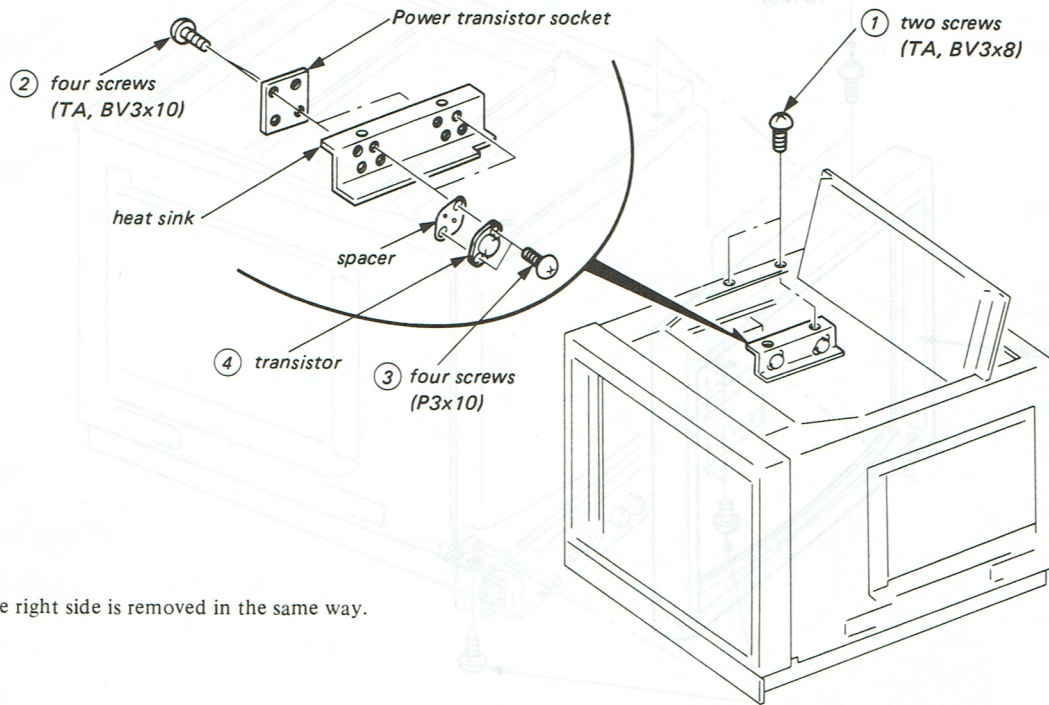


2-9. G BOARD REMOVAL (FOR CHECKING)

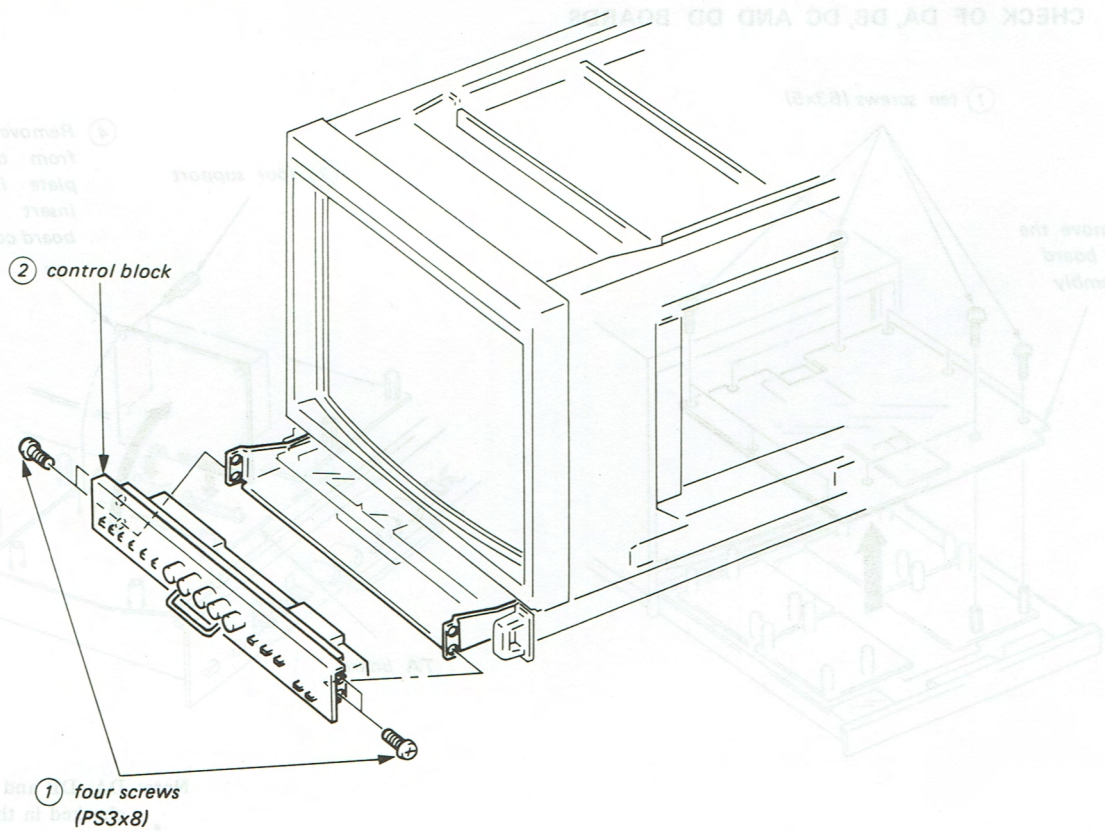
Note: As shown in the illustration, the mounted side of the G board can be exposed to the tester.



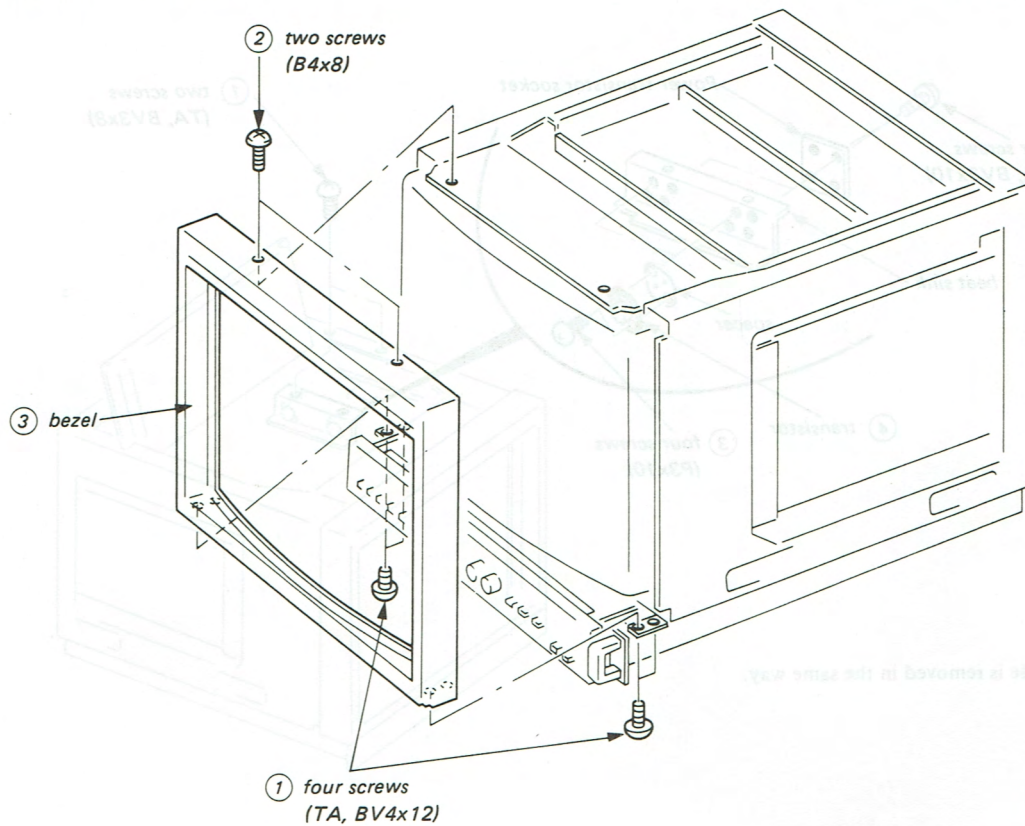
2-10. TRANSISTOR REMOVAL



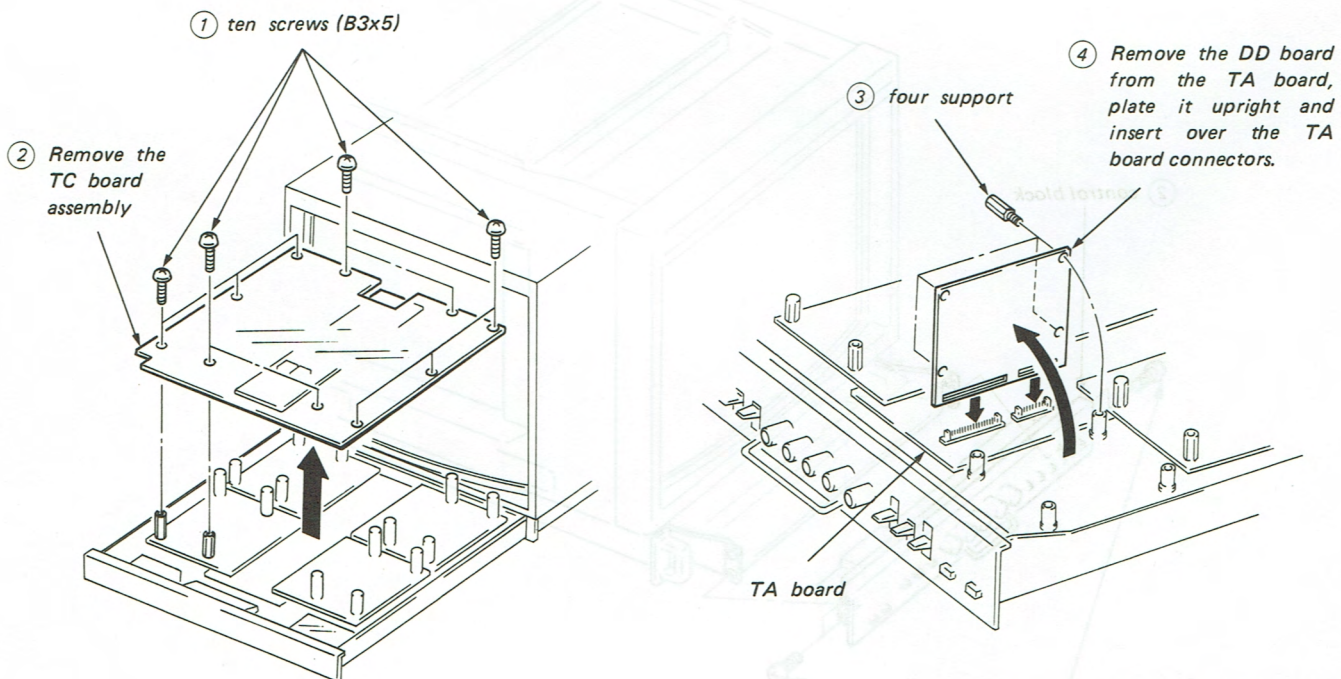
2-11. CONTROL BLOCK REMOVAL



2-12. BEZEL ASS'Y REMOVAL

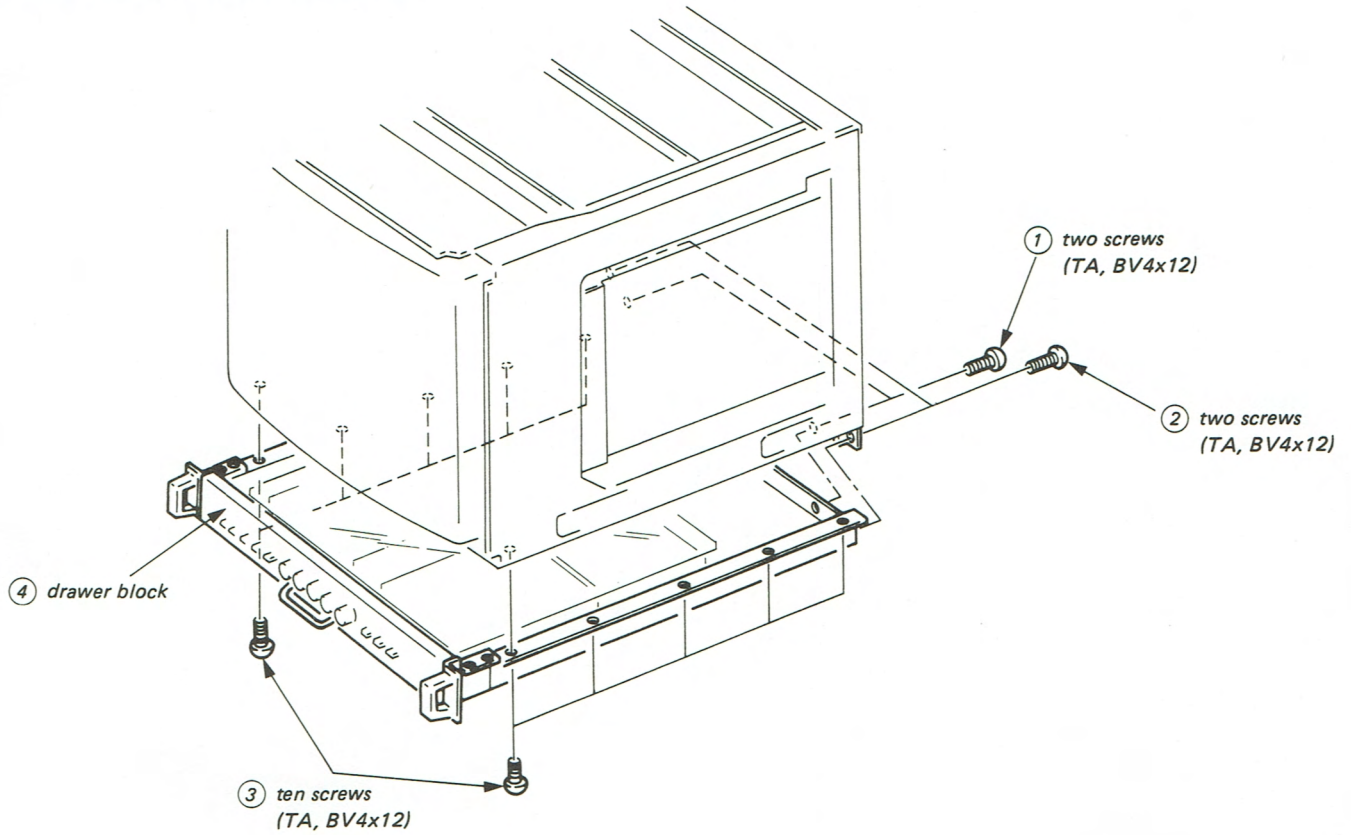


2-13. CHECK OF DA, DB, DC AND DD BOARDS

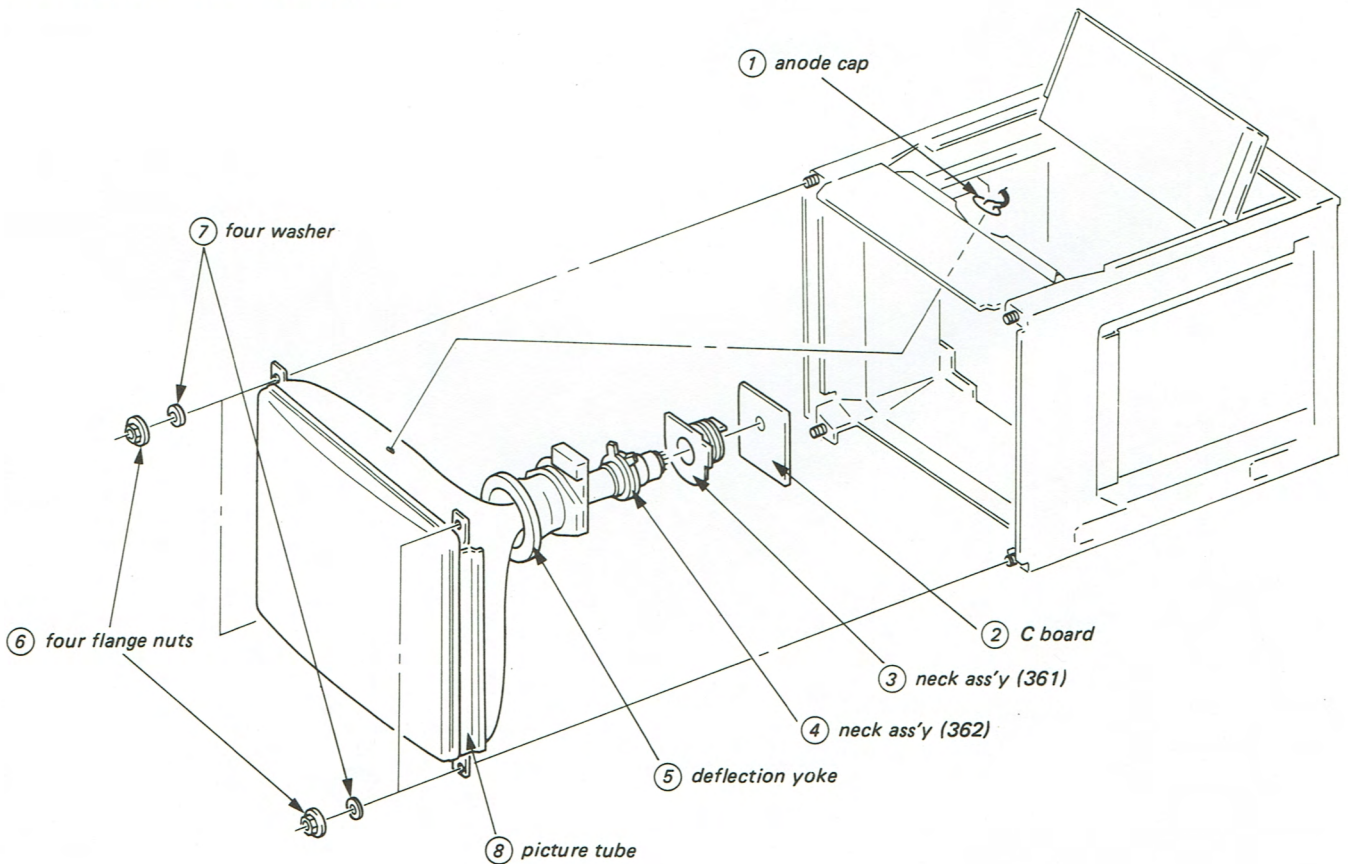


Note: DA, DB and DC boards can be checked in the same way as the DD board.

2-14. DRAWER BLOCK REMOVAL



2-15. PICTURE TUBE REMOVAL



SECTION 3

CIRCUIT DESCRIPTION

3-1. COLOR GAIN CONTROL AND LUMINANCE AMPLIFIER (BD BOARD)

BAND-PASS FILTER

The composite video signal fed to the base of Q1 has the chrominance signal separated from the composite signal by means of the band-pass filter consisting of L1, C2, CU1, C58 and R6 and this passes through buffer Q3 and is output.

COLOR GAIN CONTROL

The wave-shaped horizontal flyback pulse is presented to Q10. The variable resistance element IC1(1/4) is used as the emitter resistor and by changes in its resistance the gain of Q10 is controlled. The output of Q10 goes through buffer Q12 and is clamped to 0V by Q13. The clamp position is during the horizontal flyback period. The clamped signal passes through the IC3(1/2) buffer, is gated by Q14 immediately after the horizontal flyback period, is converted to DC by IC3(2/2) and is then presented to pin 3 of IC1(1/4), controlling the gain of Q10. This constitutes an NF loop, with gain control performed by changes in the DC voltage on pin 5 of IC3(2/2). The output of IC3(2/2) goes to pin 12 of IC1(4/4) and the signal which is fed to the base of Q4 which is gain controlled by IC1(4/4). The output of Q4 is buffered by Q7 and presented to IC2.

IC2 is a video switcher. when control pin 6 is high, the input pin 5 signal is output from pin 1, when pin 6 is low, the pin 3 signal is output from pin 1. When S1 is OFF, pin 6 (of IC2) is high and when S1 is ON during the horizontal sync period only, a low going signal is presented. One way, the output from Q7 is directly connected to pin 3 while the other way the chrominance signal is removed by L2 and C6 and the DC component only appears at pin 5. When S1 is OFF the chrominance signal is output all the time while when S1 is ON it is the chrominance signal which has been screened during the horizontal sync period.

LUMINANCE AMP

The composite video signal is applied to Q15. When B/W is selected on the Mode SW the IC4 video switch is controlled and the signal from Q15 that goes to pin 5 of IC4 is output from pin 1. The output from IC4 passes through D-L1 and is amplified by amplifier Q22 and Q23. Q24, Q25 and Q26 comprise an op amp where the signal for aperture compensation is added and amplified and the signal then goes from here to DC-2 which is for Y-C time compensation. The output of DL-2 is amplified by the amplifier consisting of Q30, Q31 and Q32, is buffered by Q33 and Q34. The output of Q33 is applied to Q35 and is clamped to 0V by the feedback clamp circuit comprising Q35 and IC5.

The clamp pulse consists of the AND of the pulse formed from the horizontal sync signal in mono-multi IC11 and the gate pulse formed from the horizontal flyback pulse in IC8, IC9 and IC10 which are ANDed and output by IC12 and IC14.

APERTURE COMPENSATION CIRCUIT

The signal which has passed through DL-1 and been amplified by Q22 and Q23 is supplied to DL-3.

The input of DL-1, the output of DL-3, the DL-1 center tap and the DL-3 center tap pass through buffers Q39, Q37, Q40 and Q38 respectively and these signals are then supplied to IC6. The outputs of Q39, Q37, Q40 and Q38 are related to the output of DL-1 (Q42) by $\pm\tau$ sec and $\pm\tau/2$ sec respectively. The outputs of Q39 & Q37 and Q40 & Q38 are added and go to pins 3 and 5 of IC6. Peaking frequency selection (selected by the Peaking Frequency selector Switch) takes place in this IC. The output of IC6 is routed to IC7, pin 4 while the output of Q42 goes to pin 8. In IC7 the pin 4 and

pin 8 inputs are added, gain controlled by the control voltage on pin 9 and output from pin 14. The aperture compensation signal output from pin 14 is buffered by Q41 and is added to the video signal in the op amp comprising Q24, Q25 and Q26.

4.43 MHz TRAP AND PHASE COMPENSATION

When a color signal is present, the output of Q15 has the sub-carrier removed by the R44, R45, C17, C18 and L4 bridged T trap circuit and this is presented to Q16. The R50, C21, L5, Q17 and Q18 active filter phase compensates the 4.43 MHz trap. The output of Q19 goes to IC4 pin 3 and the signal appears at pin 1.

3-2. COLOR DECODER (BE BOARD)

SUBCARRIER OSC

The subcarrier oscillator is a VCO consisting of Q7, D1 and D9. Q8 and Q9 are limiter circuits to remove variations in amplitude and to reject 3.58 MHz side bands by means of a bridged-T trap comprising L3, C19, C20, R53 and R54 connected to the connector of Q9.

DEMODULATOR

IC9 is the demodulator for R-Y and IC1 for B-Y. The chrominance signal is input from Q1 to pin 10 of IC9, pin 8 of IC1 and pin 9 of IC1. The B-Y phase subcarrier is supplied from the subcarrier OSC circuit to pin 12 of IC1, and the demodulated output is output as B-Y through a low-pass filter.

To IC-9 is added the phase-shifted subcarrier by the phase shifter and by T1 and IC17 every 1H. The demodulated output is output as B-Y through a low-pass filter.

BURST AGC

The chrominance signal is amplified by a VCA consisting of IC10 and Q27 and added to pin 2 of switcher IC4. Only the burst is gated and appears at pin 15 by the burst gate pulse input to pin 10. This signal is AM demodulated by IC11, D4 and D5.

Then, after being amplified by IC12, is burst separated by Q28. The separated burst pulse is input to IC14 and thus the burst sampling pulse is formed. The burst signal peak clamped by Q28 is level detected by Q26 and then adjusted by controlling the VCA so that it is equal to the reference voltage fixed by RV5.

APC

The demodulated R-Y signal is added to the feedback clamp circuit and, after the SYNC part is clamped at 0V, input to pins 12 and 5 of IC4. IC4, C10 and C11 form two S & H (Sample and Hold) circuits; when one of them is "S & Hing" the burst of an even line, the other is "S & Hing" the burst of the odd line. The potential difference between the two is detected by the adding circuit comprising IC5, IC3 (2/2) and IC6 (2/2) and is adjusted by the VCO so that it is equal to the reference voltage set by RV2.

ID CIRCUIT

When a mis-ID occurs, pin 7 of IC3 (2/2) gets a + voltage and the ID generating circuit consisting of IC8 (4/4) starts generating at the 10H period. A pulse with a period of 2H is constantly generated at pin 12 of flip-flop IC16, reversing the R-Y demodulated phase every 1H. However, at every cycle of the ID generating circuit, the number of ID pulses added to IC16 is decreased by one, which reverses the 2H period pulse phase and normalizes the ID.

HUE CONTROL

The R-Y burst S & H'd by IC4 every 1H. One part only is inverted by IC3 (2/2) and, with the IC5 (1/2) output as a reference, forms a potentiometer on the H Board and this output, as the APC HUE control voltage, controls the HUE.

KILLER CIRCUIT

The killer circuit detects the presence or absence of the R-Y burst. The output at pin 7 of IC5 (1/2) is compared with a reference voltage by IC7 (2/2). When there is a burst, a - voltage is output; when there is no burst, a + voltage is output.

3-3. BF BOARD

CCD Input Circuit, 1H Delay Line

Due to limitations of CCD input, the R-Y (B-Y) signal is input to the limiter composed of Q1-4 (Q14-17), and at the same time is clamped at the clamp circuit consisting of Q5 and IC1 (Q18, IC1), then is input to CCD IC2 (IC5). The 1H delayed signal passes buffer Q6 (Q19), then is output after the clock component is removed at LPF Q7 (Q20).

PAL-D Matrix and PAL S/D Switch

Part of the R-Y (B-Y) signal is input to video switch IC3 (IC6) pin 5 as a PLA-S signal. The other part is added to the 1H delayed signal at R24, R25 and Q8 (R70, R71, Q21) and input to IC3 (IC6) pin 3. The front panel PAL S/D switch signal is connected to IC3 (IC6) pin 6, and PAL-S or PAL-D is selected and output to pin 1.

R-Y (G-Y, B-Y) Amplifier

The PAL S/D switch output is amplified at Q9 and Q10 (Q22, Q23), passes buffer Q11 and Q12 (Q24, Q25) and is output as an R-Y (B-Y) signal. The G-Y signal is obtained by matrixing R-Y and B-Y output at Q28 and Q29, then it is amplified, passes Q31, Q32 buffer and is output. Also, each signal is clamped at the clamp circuit consisting of Q13 and IC4 (Q26, IC7) (Q32, IC7) and is DC reproduced.

CCD Clock Oscillator

Approximately 10 MHz oscillation output is obtained from the x'tal oscillator composed of X1 and Q34, the higher harmonic is removed at LPF Q35 and input to IC2 (IC5).

3-4. RGB SWITCH AND MATRIX (BG BOARD)

1. Composite Signal Mode (A.B. Test)

The demodulated R-Y color difference signal is applied to pin 2 of IC1 (2/3). At the same time, DC voltage adjusted by RV1 is supplied to pin 1 of the same IC.

Both these signals are switched by the burst gate pulse synchronized to the control terminal pin 10 AFC pulse. At output pin 15 a signal which is screened for the burst portion of the color difference signal is available.

The Y signal is supplied to pin 2 of IC10 (2/3) and the switching for both signals of the terminals of pins 1 and 2 is effected, accordingly, as the output of pin 15, the Y signal which performed the screening during the H blanking period with inserted contrast pulse is obtained.

Here, the pin 10 pulse is BRT pulse synchronized to the AFC pulse and the pin 9 pulse of IC10 (1/3) delays the phase 4 μ s against the BRT pulse, and there is a white pulse of about 4 μ s during the pulse. The DC voltages adjusted respectively by RV14, RV13, etc. go to pins 3 and 5 of IC10 (1/3), but it is switched by the pin 9 control

pulse. The DC voltage of pin 3 during the white pulse period is output from pin 4, thus forming the contrast pulse. At other times the pin 5 voltage becomes the output of pin 4 and this voltage is adjusted so as to correspond to the Y signal SET UP level. Next, the IC1 (2/3) pin 15 color difference signal output is supplied to an op amp consisting of Q5 ~ Q11 and IC2 (1/2) through Q2, Q3 and R8. At the same time the IC10 (2/3) pin 15 Y signal output is also applied to the same op amp through Q58, IC10 (3/3), Q59 and R13. Both signals are matrixed and the Red signal becomes the output of Q9. This op amp samples the output signal of Q9 and, by means of an integrator, controls the base of Q7 and effects feedback clamping. The sampling pulse is the BRT clamp pulse and the BRT pulse portion of the Q9 output signal is controlled to 0V. In addition, in the case of the RGB mode, the pin 15 output of IC1 (2/3) becomes the DC input voltage of pin 1, and the 15 pin output of IC10 (2/3) becomes the input pulse of pin 1 composed of the CONT pulse and the DC voltage for SET UP. This signal stops at the pin 13 terminal due to the control of pin 10 of IC10 (3/3) and the pin 14 output becomes the -VF voltage of the pin 12 input. Thus, in B/W mode and SET UP mode, IC1 (2/3) and IC10 (2/3) only operate the same way as in the RGB mode.

In PIC SET mode, a portion of about 10 μ s of the H trace period at the position set by the PIC SET position appears at the outputs of IC1 (2/3) and IC10 (2/3) as the video signal, and the other portion becomes the same operation as in the SET UP mode.

In the same way, the other color difference signals, G-Y and B-Y, are screened and matrixed with the Y signal, and after that they are output as green and blue signals from Q28 and Q47 respectively.

2. Matrix Switch

The R-Y, G-Y and B-Y matrix switch operations of are performed respectively by IC1 (3/3), IC4 (3/3) and IC7 (3/3). The matrix ratio against the Y signal for each color difference signal varies by controlling pin 11 of each IC and the red, green and blue chromaticity points can be changed by varying the matrix ratio.

3. RGB Mode

The Red signal applied to pin 2 of IC3 (2/3), and the pulse signal to pin 1 are switched by the pin 10 pulse control terminal. The H blanking period is screened by the SET UP level as the output of pin 15, and a red signal inserted contrast pulse is obtained.

The Contrast Pulse Level and Set Up Level are adjusted by RV2, RV3, etc. respectively. Both these DC voltages are switched by the white pulse of IC3 (1/3), and so the contrast pulse is obtained. The pin 15 output of IC3 (2/3) is goes to the op amp (consisting of Q5 ~ Q11 and IC2 (1/2)) through Q12, IC3 (3/3), Q13 and R14.

At this point, the color difference signal and Y signal are stopped in the same circuit, and the red signal from Q9 is obtained as the output so that a DC voltage only may be supplied to the op amp. In the COMP mode, the pin 14 output of IC3 (3/3) becomes the -VF DC voltage for pin 12 terminal input by control of pin 11, and the red signal is stopped at pin 13.

4. DECODER OUT Circuit

The R-Y signal with the burst portion screened by IC1 (1/3), and the Y signal (through Q60 and Q61) are matrixed by R41 and R42, and are applied to the op amp comprising Q14 ~ Q19 and IC7 (2/2). The red signal is amplified about 4 times and is output from Q17.

The Green and Blue signals are also output from Q36 and Q55 respectively in the same way.

3-5. CONTROL AMPLIFIER (BH BOARD)

1. Control of Contrast and Brightness

The red signal, which includes the contrast pulse passes through Q1 and IC1 and is input to the emitter of the grounded-base amp Q3. IC1 is a variable voltage resistor element and the gain of Q3 is determined by this resistor element. The Q3 output signal goes through Q5 and D1 and into the OP AMP composed of Q7-Q10. Negative feedback is achieved by clamping the BRT pulse of this output signal to OV at Q14, by sampling and integrating the contrast pulse at Q15 and IC2 (2/2), and by applying the output DC voltage to the control pin 4 of IC1.

Therefore, the output signal level of Q10 can be controlled by changing the IC2 (2/2) pin 6 reference voltage. This represents a change in contrast and IC2 (2/2) pin 6 is connected to CONT VR through IC303 (1/2). The green and blue signals are also processed and controlled in the same manner.

2. Peak Limiter

The DC voltage adjusted by RV1 goes through Q12 and is applied to Q11. The portion of the Q11 output red signal which exceeds this DC voltage level is stopped by cutting off Q11. The red signal output of Q11 is clamped by the brightness pulse signal and therefore, the peak limiter always functions at the specified level. The green and blue signals are limited in the same way.

3. Processing of Drive and Blanking Signals

The Q11 red signal output is applied to pin 2 of IC3, while the pulse of (1) is switched by the BM SW pulse of period V on control pin 10 and is fed from (15) to (12).

Here, the ① pulse signal is produced at (4) by switching (3) and (5) terminals by the V period BM pulse of control terminal (9). In this way, the voltage input on (5) in the BM pulse section or ground potential on terminal (1) in the other section are supplied to terminal (12). And, further the signals on (12) and (13) are switched by the R.BLK pulse on control terminal (11) and the red signal which contains H and V blanking pulses is output on (14). Hence, this signal comprises the red DC voltage switched by the blanking pulse on (11) between the blanking level set at (13) and terminal (12) from the other section. Green and blue signals are processed in the same way.

4. Delay Mode

In H and V delay mode, IC304 switching circuit increases the DC voltage on IC301 (1/2) input (2) and the DC voltage on IC303 (1/2) input (3) to increase the brightness and to decrease the contrast.

3-6. PULSE GENERATOR AND CROSS HATCH (BI BOARD)

1. Pulse Generator

This pulse generator is for controlling various signals as well as the horizontal and vertical deflection pulses.

(1) White pulse, white clamp pulse, BRT pulse, BRT clamp pulse. The wave-formed AFC pulse is applied to mono-multi IC3 (1/2) (1) and a pulse of approximately 0.4 μ s width is output from (13) based on the leading edge of the input pulse, and a further pulse of approximately 3 μ s width based on the trailing edge is output from (5) and (12) by the next mono-multi IC3 (2/2).

The output pulse from (12) goes through IC13 (4/4) and Q2 becomes the BRT clamp pulse. Based on the trailing edge of IC3 (2/2) pin 5 output pulse, a pulse of 0.4 μ s is generated by IC7 (1/2) and likewise a pulse of 0.4 μ s is generated by IC7 (2/2), output by pin 5. The white clamp

pulse is obtained by generating a pulse of approximately 3 μ s in IC10 (1/2) based on the trailing edge of this pulse and feeding this pulse through IC5 (1/4) and Q1. The white pulse is output from IC10 (2/2) (5) by supplying terminal (11) with an AFC pulse which is reversed in phase by IC1 (1/4).

(2) Beam control pulse

The vertical blanking pulse is clipped at D1 and applied to pin 12 of IC2 (1/4) (data terminal of D-FF). Meanwhile, AFC pulse from IC1 (1/4) is applied to clock terminal (9). Outputs on (10) and (11) will be V-blanking pulses, with the phase delayed up to the first AFC pulse position. A V-blanking pulse with delayed phase is output for every H-pulse by applying this pulse to IC2 (2/4) and IC2 (3/4). A BM SW pulse of 2H vertical period is obtained by gating the IC2 (3/4) (7) output at IC9 (4/4) which is delayed 2H from this pulse and by inverting in IC9 (1/4). Likewise, a BM pulse of width 1H is obtained by gating the IC2 (3/4) (7) output at IC9 (3/4). Therefore, the position of this 1H pulse coincides with the second half of the previous 2H-wide BM SW pulse. A pulse of approximately 10 μ s is obtained based on the trailing edge by supplying mono-multi IC14 with an AFC pulse from IC1 (1/4) output (3).

A pulse of approximately 30 μ s is obtained at mono-multi IC16 after differentiating the 10 μ s pulse. This pulse of 30 μ s is generated every 1H and is applied to IC6 (1/3) (2), and a pulse of 30 μ s is obtained within the first 1H of the BM SW pulse by applying the first pulse of 30 μ s to IC6 (1/3) (2) and further applying IC2 (2/4) output (2) and IC2 (1/4) output (11) to IC6 (1/3) terminals (1) and (13) terminals and gating. This pulse of 30 μ s obtained in the first 1H of the BM SW pulse is processed in IC4 (1/4) and Q4 to obtain the BKG clamp pulse. Likewise, the 30 μ s pulse which is gated at IC6 (2/3) is positioned in the BM pulse, goes through IC4 (2/4) and Q3 to form the BM clamp pulse.

(3) R.G.B. OFF control pulse

The H-blanking pulse which is inverted in IC1 (3/4), the V-blanking pulse from IC1 (2/4) output (6), and the phase-delayed V-blanking pulse from IC2 (1/4) output (11) are gated at IC6 (3/3) and the output applied to IC15 (1/4) (2) through IC15 (2/4). In the display mode, IC12 (2/4) (4) is generally high and output (6) is also high and IC15 (1/4) (3) is the inverse of the pulse on (2). With the red signal turned OFF, IC12 (2/4) terminal (4) will be low and IC2 (3/4) (7) output of the 2H delayed V-blanking pulse input on (5) is output on IC12 (2/4) (6) and applied to IC15 (1/4). At this point, it is gated with the input on (2) and the 'Low' pulse is output on IC15 (1/4) (3) only during the BM SW pulse duration. This pulse controls the blanking of the BH substrate and functions as the red signal ON/OFF SW outside the duration of the BM SW pulse. Green and blue signal functions are processed in the same way.

(4) Mode control switch and PIC SET pulse

IC11 provides control signals for various modes such as COMP/RGB signal, B/W, and COLOR, etc. required on the BG Board. In the set up mode, IC11 is controlled through IC8 (2/4) and IC4 (1/4). For B/W, the process is through IC13 (3/4) and (1/4). In PIC SET mode, a pulse of approximately 10 μ s is generated based on the trailing edge of the pulse applied to IC14 (1/2) (2) and this pulse of 30 μ s is applied to IC11 through IC9 (2/4), IC13 (2/4), and (1/4),

With PIC SET turned ON, IC11 controls so that the image is displayed only during the $10\ \mu\text{s}$ pulse. A pulse of approximately $2\ \mu\text{s}$ as IC17 (2/2) output is formed by supplying IC17 (1/2) with the 1H SYNC pulse processed on the BJ Board and used as the clamp pulse for the color difference signal.

2. Cross Hatch Generator

(1) H-hatch generator

The shaped horizontal sync pulse is fed through R52 to IC18 (4/4) (13). In cross hatch mode, IC18 (4/4) (13) goes to IC18 (1/4) and is applied to Q21 because a low level is applied to both IC8 (2/4) (1) and (2) making output (3) high. Q21 output, after being differentiated, is applied to Q25 through amplifiers Q22 and Q23. Q24 and Q25 form an osc with the resonance circuit comprised of L1 and C28 and stops oscillating only when SYNC pulses are applied to Q25. The osc output goes through the limiter circuit comprising Q24 and Q26, down counted in IC22 (2/2), applied to mono-multi IC25 (1/2) (1), where the pulse width is set.

(2) V-hatch generator

IC20, IC22 (1/2) comprise a 5-bit binary counter. A $1/32\ f_H$ pulse from IC22 (1/2) (12) is input to IC23 (4/4) input (12) using the output from IC18 (1/4) (3) as the clock. Here, the IC23 (4/4) (12) input pulse varies depending on 50/60 SW input. An $1/8\ f_H$ pulse is output from IC20 (8) (60 Hz) or a $1/16\ f_H$ pulse from IC20 (11) for 50 Hz. IC23 (3/4) and (2/4) are a latch set by the differentiated pulse from IC23 (4/4) (11). A $1/2\ f_H$ pulse from IC20 (1) goes through IC23 (1/4) into IC23 (2/4) for re-setting. IC23 (3/4) output (8) forms a pulse with a 1H duty cycle in 20H by feeding IC23 (3/4) output (8) to IC21 (4/4) and (2/4) and by feedback to IC20 (2), (3) and IC22 (1/2) (2).

In the 50 Hz mode, the output will be of period 24H and the counter can also be reset by V-SYNC.

3-7. SYNC PROCESSOR (BJ BOARD)

SYNC AGC

The Video signal is input to terminal 16A of the BJ Board, switched by the input selector or SYNC selector, and fed through the active filter consisting of R5, C3, and Q2, via Q1. The output from Q2 emitter and the DC bias on Q3 emitter are input to the emitter of AMP Q11. Q14 connected to Q11 collector functions as a variable impedance element controlled by the bias on the base of Q14 to form an AGC circuit which controls the gain of Q11. The output from Q14 collector is applied to Q4 through amplifiers Q12 and Q5 in cascade. Q7, Q8, and Q18 are voltage comparators which compare their base DC voltages with the DC level on Q4 emitter. The base biases on Q7, Q8, and Q18 are set by the voltage divider comprising R22, R23, R24, and R25. Q7 conducts when Q4 outputs a SYNC pulse to charge C7, and Q4 output is DC regenerated by driving Q5 and Q6 with this voltage. Q8 is turned ON at a 50% pedestal level from the SYNC from Q4. Q18 compares the SYNC width and blanking width of Q4 output to establish the pedestal voltage level via the AGC loop. The collector voltage of Q18 is fed to the C13, R37 integrator circuit to determine the Q14 emitter impedance by the voltage on C13 and to control Q11 AMP GAIN so that Q18 is turned ON at the signal pedestal level.

1H SYNC Separation

The 1H SYNC is synchronously separated and differentiated by C14, R41, and R42 in the Q9 collector output, and only the negative-going edge (leading edge) of the SYNC pulse goes through IC4 (2/4) and IC4 (3/4) into terminal (1) of mono-multi IC5 (1/2). Q9 output is inverted in IC4 (1/4) to drive IC5 (1/2) input (3). By R45 and C16 connected to IC5 (1/2), the output from IC5 (1/2) (4) will have a polarity determined by the negative-going trigger pulses input to IC5 (1/2) terminals (1) and (3). The output from IC5 (1/2) (4) is applied to IC2 (2), and a positive polarity pulse of approximately $50\ \mu\text{s}$ is obtained at IC2 (3), based on the leading edge (negative-going) of the SYNC pulse. This pulse, after being inverted in IC4 (4/4), is applied to IC4 (3/4) (10) to be gated with the output pulse from IC4 (2/4) (6), so that the equivalent pulse etc. included in the sync signal at Q9 is removed. In this way, the output pulse on IC5 (1/2) (4) is given a period of 1H.

H. Delay

The output pulse from IC5 (1/2) (4) is applied to terminal (2) of mono-multi IC3, and a positive polarity pulse of approximately $40\ \mu\text{s}$ is output from IC3 (3) by R53, RV1, C21, C22, and IC3, based on the leading edge (negative-going) of the H SYNC pulse. This pulse is applied to mono-multi IC5 (2/2) (9), and the output from IC5 (1/2) (9) goes through IC6 (2/4) and input to terminal (10). In the H delay mode, IC6 (2/4) (5) is brought to OV, and a negative pulse of approximately $6\ \mu\text{s}$ is obtained at terminal (12) of IC5 (2/2) by R59, RV2, C27, and IC5 (2/2), based on the leading edge (negative-going) of the pulse input to terminal (9). In normal mode, the pulse on IC5 (2/2) (9) is cancelled by the pulse on terminal (10), and a negative pulse of approximately $5\ \mu\text{s}$ is obtained on terminal (12), based on the leading edge (negative-going) of the pulse on (10).

31 kHz Generator

A shaped horizontal blanking pulse is applied to IC17 (2) and IC14 (2/3) (5), and a pulse of approximately $32\ \mu\text{s}$ is obtained at IC17 (3) by R61, RV3, C29, C30 and IC17, based on the negative-going edge of this pulse. The pulse is differentiated by C32, R63, and R62 and applied to terminal (4) for gating with the pulse on (5), so that a negative pulse of frequency 31 kHz is obtained at terminal (6).

V. SYNC Generator

IC9, IC12, and IC15 are binary counters using the 31 kHz pulses from IC10 (4/6) as clock. The SYNC signal from Q9 is integrated by R81, C44, R82, R83, C45, and IC16 (2/2), sliced by D11 and D12, and the V. SYNC is separated. This V. SYNC passes through buffer AMP IC16 (1/2) and is differentiated by C47, and R89 and input to AMP Q21. The negative V pulse at Q21 collector is inverted by IC10 (6/6), and fed to IC7 (1/4) (3). It is also differentiated by C38, R74, and R75 and applied to IC7 (4/4) (14). IC13 (4/4) (11) for 50 Hz is L within 1 field after this V pulse is applied.

Because this V pulse passes through IC8 (2/4) and IC7 (4/4) (13) is held high, IC10 (5/6) (10) will be low, and IC7 (1/4) (3) will be high respectively. The next V pulse input to IC7 (4/4) (3) gives the inverse output at terminal (4) of IC7 (1/4), differentiated by C39, R76, and R77 and applied to IC13 (1/4) (1). When the output at IC10 (2/6) (4) changes from H to L before the second V pulse is input, it is differentiated by C37, R72, and R73 and the output from IC13 (1/4) (3) becomes H resetting counters IC9, IC12, and IC15. Furthermore, the output from IC13 (1/4) (3) passes through IC10 (3/6) and is inverted to become reset pulses for IC13 (2/4) and IC7 (3/4) and each output is held L. Likewise, the V pulse input to IC13 (1/4) (1) also resets the counter.

NORMAL Mode

Terminal (2) of IC14 (1/3) is supplied with +5V. Terminal (1) of IC14 (1/3) is supplied with the $1/2 f_H$ pulse from IC15 (9), and changes from L to H within 1H after input of the V pulse and IC14 (1/3) (12) changes from H to L. This change is passed through IC7 (3/4) and IC10 (1/6), differentiated by C35, R68, and R67 and input to IC7 (2/2) (6) and terminal (7) is held H. IC7 (2/2) (5) is supplied with the $1/4 f_H$ pulse from the output of IC15 (8), and the output from IC7 (2/2) (7) goes high after 4H of V pulse and is fixed after 8H. This condition is held until the next V pulse is input.

V Delay Mode

Terminal (2) of IC14 (1/3) becomes OV from the delay switch. For 50 Hz, IC7 (3/4) (12) is supplied with the inverted pulse from IC14 (3/3) of $1/16 f_H$ from IC12 terminal (12), $1/256 f_H$ from IC9 terminal (9), and $1/64 f_H$ from IC12 terminal No. 8. This pulse is the 168th H from the V pulse and changes from H to L, and the output from IC7 (3/4) (9) changes from L to H, while IC10 (1/6) changes from H to L. By the same principle as in the NORMAL mode, a positive pulse in a range of 4H from the 168th H is output from IC7 (2/2) (7). For 60 Hz, input to IC14 (3/3) terminals (9) and (11) is +5V and the input is $1/256 f_H$, therefore, IC14 (3/3) input changes at the 128th H.

V. SYNC Noise Gate

For 50 Hz, the $1/512 f_H$ pulse from terminal (8) of IC9 and $1/16 f_H$ pulse from terminal (12) of IC12 are NAnDED and applied to IC7 (4/4) (15) via IC8. Up to the 264th H from the V pulse input, the output from IC10 (5/6) (13) is L and will go H after the 264th H. These changes are inverted in IC10 (5/6), and applied to terminal (1) of IC7 (1/4). At IC7 (1/4) (2), it will be L on the 264th H from V pulse input, and as the V pulse is input thereafter this condition continues to be H until the counter is reset. Therefore, terminal (4) output will not have a noise component because the noise is cancelled by IC7 (1/4) even if noise is mixed in the V pulse up to the 264th H after the V pulse is input. For 60 Hz, input will be on the IC11 (2/2) side, and the input is a combination of $1/265 f_H$, $1/128 f_H$, $1/32 f_H$, and $1/16 f_H$, therefore, the gate opens at the 216th H in the same manner as above.

V Free-run Generator

For 50 Hz, the input to IC11 (1/2) is NAnDED with the $1/512 f_H$ output from IC9 (8), $1/64 f_H$ from terminal (8) of IC12, $1/32 f_H$ from terminal (9) of the same IC, and $1/128 f_H$ from terminal (11) of the same IC. From terminal (6) of IC11 can be obtained a pulse which changes from H to L at the 368th H after the V pulse input. However, this output can only occur if the next pulse has not been input and the counter has not been reset. At this point of time, the output from IC13 (3/4) (8) changes from L to H at the 368th H and is inverted in IC10 (2/6), differentiated by C37, R72, and R73, and at terminal (3) of IC13 (1/4) is obtained a pulse which changes from L to H at the 368th H. This pulse resets the counter and repeats resetting until the V pulse is input to provide the output from terminal (7) of IC7 (2/2) with a 4H pulse at the 368H period. For 60 Hz, the input to IC11 (1/2) will be $1/512 f_H$, $1/64 f_H$, $1/32 f_H$. Therefore, a pulse can be obtained at the 304th H and further a pulse of 4H at the 304H period can be obtained at terminal (7) of IC7 (2/2).

3-8. VIDEO OUTPUT (BK BOARD)

This board contains the output circuits for the R.G.B. video signals, which are the same for all 3 channels, therefore, explanation is made only for the R channel here.

Video Output

The video signal contrast controlled by the BH Board is input to terminal BK-1 and drives FET IC1. This FET functions in the same way as described for the contrast control and acts as the emitter resistor for Q3 to change the gain. Q3 collector output drives Q4 and is clamped by C22 and Q27 within the horizontal blanking phase. This clamped output passes through feedback amps Q5, Q6, and Q7 to drive the video output stage. The video output stage comprises Q8, Q9, Q10, Q11, Q12, Q13, Q14, and Q15. The video signal via the base of Q8, drives the differential amp consisting of Q8, Q9, and Q10 and the collector output of Q8 drives the emitter of Q11. Q11 collector output drives output stages Q12 and Q13 in active load configuration and further drives the push-pull stages Q14 and Q15 to drive the CRT grid. The output of Q14 and Q15 drives the base of Q10 through R77 to provide feedback.

AGC Circuit

The video signal with a pulse inserted in the vertical blanking on the BK Board goes through R72 from the output stages of Q14 and Q15 to drive IC4 (2/2). The signal is inverted in IC4 (2/2). Q24 and Q25 clip the signal while holding the dynamic range of the circuit.

The IC4 (2/2) output is gated with the basic voltage of Q23 which is controlled within the vertical blanking phase. This output is integrated by IC2 (1/2) and C20. The output from IC2 (1/2) (1) is fed back to terminal (5) of IC4 (2/2) as a feedback clamp and the controlled voltage at terminal (7) of IC4 (2/2) will be "zero". This output is gated by Q22. It is gated in the same phase as the BM pulse inserted on the BH Board, integrated by IC3 (1/2) and C17, passes through the buffer and controls the GATE voltage of IC1 to provide AGC. GAIN control changes the gain by changing the value of the pulse inserted in the pot. on the DD Board.

Beam Control

A voltage is input to terminal BK-3 proportional to the cathode current and divided by R52 and R87. This voltage is gated by the BM pulse inserted into the vertical blanking at Q19. That is, Q19 turns ON for the period during which the pulse is not being inserted and the signal will not reach IC4 (1/2). The inserted BM pulse is inverted and amplified by IC4 (1/2) and GATED by Q17. This gated signal is integrated by IC3 (2/2) and C14, DC converted to control the base voltage of Q10. By this, the DC voltage of Q14 and Q15 in the video output stage is changed further to change G_1 of the CRT. When the voltage of G_1 changes, the beam voltage of the CRT also changes and the voltage at the BK-3 terminal changes. That is, they form a feedback loop to hold down CRT drift including circuit drift, so that a very stable black level can be obtained on the CRT display.

The reference voltage for this black level is terminal (5) of IC3 (2/2) and this voltage can be changed by the volume control bias on the DD Board.

This completes the explanation for the R channel, and the G and B channels are the same.

3-9. VERTICAL DEFLECTION AND AFC (DA BOARD)

Vertical Ramp Generator

The vertical trigger pulse from the BJ board enters the Q9 emitter and drives Q11 from the Q9 collector. IC3 (1/2) and Q11 constitute an integrator which generates a saw-tooth wave. When there is no trigger pulse at the base of Q11 -12V flows through R54, R53 and C25, and the pin 1 output of IC3 (1/2) is integrated. When a trigger pulse enters the base of Q11, Q11 turns ON and C25 is discharged through R55. At the same time, pin 1 of IC3 (1/2) feeds NF to pin 2 through R55, accordingly, the pins 1 and 2 of IC3 (1/2) become the same voltage, namely, 0V. As a result, a saw-tooth wave that is 0V for the trigger period is obtained at pin 1 of IC3 (1/2).

Vertical Amplitude Switch

The output from pin 1 of IC3 (1/2) drives IC3 (2/2) through R57. The load of Q12, Q13 and Q14 is connected through a resistor at the point of intersection R57 and R58. Q12 ~ Q14 are off during EXPAND. Q12 in Normal, Q13 in Underscan and Q14 in Set Up go on respectively, and the input amplitude of IC3 (1/2) is varied. The DC voltage to trigger Q12 ~ Q14 consists of the NAND and INVERTER of IC10 ~ IC12.

Vertical Sine Wave Generator

The output of IC3 (2/2) passes through IC7 (1/2), IC7 (2/2) and IC8 (2/2) via IC9 (1/2). The IC7 (1/2) and IC8 (2/2) are integrators and the sawtooth signal becomes a sine wave when integrated twice. Q20 ~ Q22 switch the amplitude in for Normal, Under and Expand. The sine wave goes through R128, and is mixed with the saw-tooth wave through R129, enters IC8 (1/2) and drives the vertical output from the pin 1 output.

Vertical Blanking Pulse

The vertical blanking pulse changes the pulse width for Normal, Under and Expand. In Normal, the collector pulse of Q9 triggers the base of Q16 through R89 and this output drives pin 2 of IC6. Q17 turns ON at the same time. For this reason, IC6 generates the vertical blanking pulse at pin 3 due to the time constant determined by R95, C32 and C33. In Underscan, Q17 turns OFF and the vertical blanking is generated at the time determined by R95 and C33.

In Expand, IC4 (1/2) and (2/2) operate, the outputs are mixed by D4 and D5 and this drives Q16 through R90.

The output drives pin 2 of IC5, wave-shapes, goes through R88 and drives Q16. In other words, in Expand, the outputs of Q9, IC5 and Q15 are mixed by the resistors and drive Q16, being waveform-shaped by IC6, and, except for the scanning time, the blanking pulse is generated.

H. AFC and Picture Phase Circuit

The H. sync pulse from pin 8 of terminal DA2 drives IC1. The pin 13 output produces the pulse width by means of the CR connected to pins 14 and 15. The phase of video system phase at present adjusts the picture phase by changing the pulse width by varying the resistors connected to pin 15 by Q1, Q2, Q3, Q4, Q5 and Q6 in order to shift the picture phase in RGB + Color and Trap modes.

The IC1 pin 13 output enters pin 9 and the output is obtained at pin 5. This fixes the pulse width of H. sync at 5 μ sec. The output of IC1 drives Q7 and pin 1 of AFC IC2.

The time constant of the AFC IC 2 is connected to pins 4 and 6 and it is varied by means of the LCR connected through SW1. The H. Flyback pulse is converted to TTL level by R38, D1 and D2, and is supplied to pin 9 of terminal DA2 through the Q8 emitter follower circuit of Q8.

50 - 60 Hz Switching Circuit

The DC voltage from pin 19 of DA Board terminal DA2 is 50/60 Hz switched through IC12 (5/6) and IC9 (2/2). Q10 switches the saw-tooth wave amplitude, and vertically related amplitudes are 50/60 Hz switched by the sine amplitude switching transistors Q18 and Q23 located near the IC7 and IC8 sine generators.

3-10. VERTICAL, HORIZONTAL PINCUSHION, HORIZONTAL AMPLITUDE, LINEARITY (DB BOARD)

Vertical Pincushion Compensation

The amplitude of the vertical saw-tooth wave from pin 8 of DB2 is switched by the Q4, Q5, Q6 and Q7 scanning mode. This output drives pin 10 of IC6 through IC4 (2/2). The horizontal flyback pulse is changed to TTL level on the DA Board, driving pin 2 of IC1, where it delayed by about 1H. This output drives pin 1 of IC2 and the output of pin 13 is phase-adjusted by RV4. In other words, this is a pin-phase, this pulse enters pin 9 of IC2 and the pin 5 output is shaped to a pulse width of about 10 μ sec. This output triggers Q1. When Q1 is OFF, C10 is charged by the designated current by Q2 and Q1 is turned ON by the trigger pulse. In other words, this forms a saw-tooth wave generating circuit of horizontal period. The output is integrated by R10, R12 and C12 via Q3, becoming the parabola waveform. This is amplified by IC3, and the output of pin 6 is supplied to pin 11 of IC6 through R17 and R18. IC6 is a double differential amplifier used as a balanced modulator. Therefore, the output pin 7 of IC6 has a "butterfly" waveform which drives the vertical output circuit from pin 13 of terminal DB12.

The IC4 (2/2) output is phase-inverted by IC5 (1/2); the vertical saw-tooth wave is picked off by RV-6 from between the IC4 (2/2) and IC5 (1/2) outputs, after which it enters the IC5 (2/2) buffer. The output of Q3 the horizontal saw-tooth wave drives pin 10 of IC7 through R70 and C30; IC7 forms a balanced modulator circuit like IC6. The balanced modulator output is applied from pin 6 of IC7 to pin 2 of IC3. The output of IC3 is able to compensate parallelogram distortion by means of the IC7 pin 6 output so that further balanced conversion may be take place in IC6.

Horizontal Pincushion Compensation

The vertical saw-tooth wave from the pin 8 terminal of DB2 is integrated by R89 and C31, and becomes a parabola after 50/60 Hz amplitude switching by Q17. At the same time, DC is integrated by RV10, R95 and C31, forming the saw-tooth wave.

When the center terminal of RV10 is 0V, the saw-tooth wave does not appear. In other words, RV10 works as pin phase compensation. IC9 (1/2) is a buffer and IC9 (2/2) is an amplifier. In IC9 (2/2), the amount of feedback is controlled by changing the ratio of the R102 and R101 feedback resistors by the Q20 ~ Q22 of scan mode switches; thus the amplitude is varied.

The amplitude switched parabola drives pin 2 of comparator IC11. The AFC pulse from the pin 14 of DB1 is switched by comparator IC10 via D1, R109 and R110. This shaped pulse is integrated by R114, C33, R117, C34, R118 and C35, and drives IC11.

Thus, a waveform pulse-width-modulated repeatedly by the horizontal period is obtained at the output of IC11. The horizontal deflection circuit is modulated by this output from pin 6 of DB1.

Horizontal Linearity

The AFC pulse from pin 14 of DB1 is shaped by Q10, and drives the integrator consisting of Q11 and Q12. When there is no pulse from Q10, Q11 turns OFF and C28 charges from Q12. When Q11 turns ON, C11 is discharged through Q11. The parabola output of IC9 (2/2) is supplied to R79 through the IC8 (1/2) buffer. Thus, the input of Q13 becomes a saw-tooth wave amplitude-modulated by the parabola, and this output drives the horizontal output circuit from pin 5 of DB1 via Q14.

3-11. CONVERGENCE COMPENSATION (DC BOARD)

Horizontal Dynamic Convergence

The AFC pulse from pin 9 of DC2 is converted into a parabola by L1 and C17. After amplitude switching by Q11 in underscan mode, it goes to pin 10 of DC2. The saw-tooth wave is formed by L2 and C16, and because of Q12, 13 and 14, a saw-tooth wave of opposite polarity is available at the emitters of Q14 and Q13. The saw-tooth wave is mixed by RV15 at the base of Q15. In other words, the amplitude is adjusted by RV13 and the tilt is adjusted by RV15.

Y Bow Convergence

The horizontal saw-tooth wave from pin 7 of DC2 is 50/60 Hz amplitude switched by Q1 and integrated by IC1 (1/2) and Q2, becoming parabolic. The amplitude in scan mode is switched over by IC1 (2/2). This is to vary the NF loop resistance of IC1 (2/2) by means of Q6, Q7 and Q8. The output of IC1 (2/2) has DC feedback from Q9, IC3 (1/2) and IC3 (2/2). The feedback clamp is fixed by the Q9 gate pulse formed by IC4 and IC5. The output of IC1 (2/2) drives the convergence yoke through IC2 (1/2) and the output stage D1, D2, Q4 and Q5, and NF is applied to IC2 (1/2) from R23 through R24 from this output. Thus tilt is adjusted by RV11, and amplitude by RV2, RV3 and RV4.

Corner Y Bow

The vertical parabola output of IC1 (2/2) drives pin 10 of IC6 and the horizontal parabola is supplied to pin 11 of IC6 which acts as a gain controller. The horizontal parabola becomes the vertical parabola modulated waveform. The output of pin 7 drives Q15 through Q16. The parabola output at the center of the vertical period the parabola output becomes a waveform of 0 so that the amount of compensation may be further minimized in the horizontal period so that corner Y bowing may be compensated. The amount of compensation is determined by RV16 horizontal convergence compensation

Linearity Compensation

This compensation takes place in IC11. The vertical saw-tooth wave is supplied to pin 10 of IC11 and the horizontal saw-tooth wave generated by Q14 enters pin 11. It is also balanced modulated by IC11. The pin 7 output is applied to Q15 through Q23. Convergence compensated so that the output may be balance modulated in balance, to reverse horizontal saw-tooth wave phase in the first and last halves of the vertical period; and the compensating quantity becomes 0 at the center of the vertical period.

Vertical ("UP/DOWN") Convergence

The vertical saw-tooth wave from pin 7 of DC2 enters IC7 and IC8. Output pins 1 and 7 of IC7 (1/2) and IC7 (2/2) reverse the polarity mutually for the latter half of the vertical period, while the outputs of IC8 (1/2) and IC8 (2/2) do so for the former half. RV9 and RV8 are used for convergence adjustment of the vertical former and latter half portions. The pin 3 input of IC9 (1/2) varies the DC bias and adjusts the V static convergence. The output of IC9 (1/2) is output through Q17 and Q18 and controls the CRT, passing through the necktwist coil between pins 11 and 12 of DC1.

Middle "S" Convergence Compensation

The vertical saw-tooth waveform from pin 7 of DC2 drives pin 2 of IC10 (1/2) and, this output is phase reversed at the same amplitude by IC10 (2/2). I10 (1/2) and I10 (2/2) drive respectively Q19, Q20 and Q21, Q22. Thus, in addition. Pins 13 and 14 of DC2 drive the P Board output circuit.

3-12. VIDEO CONTROL AND H. BLANKING BOARD (DD BOARD)

The video control section is for adjusting bias, drive, screen voltage, etc. for the video system. The Picture Set position which checks the signal and the set black levels, shifts phase by means of IC2.

The H. blanking forms the AFC pulse from pin 4 of DD2 into a parabola wave (in L1, C77 and RV4) and drives comparator IC1 (2/2).

The parabola phase is varied by RV24 and the slice level by RV25. These VRs adjust the H. Blanking.

3-13. VERTICAL OUTPUT AND HORIZONTAL OUTPUT CIRCUITS (E BOARD)

Vertical Output Circuit

The vertical output is from the amplifier consisting of Q1, Q2, Q4, Q5, Q6, Q7 and Q8.

The vertical saw-tooth wave from pin 1 of terminal E-3 enters, driving Q2, goes through Q4 and drives the deflecting yoke from the Q5 ~ Q8 output stage.

The T1 output stage transformer is the vertical pincushion transformer and feeds NF to Q2 from R20 on the secondary side. The vertical pincushion operates by modulation of the NF voltage by Q3. In other words, the compensating waveform for the vertical pincushion enters the emitter of Q3. D9, which is the power supply for the flyback pulse integration during the retrace period, turns ON through R17 and C9 during the retrace period, and driving is from high voltage.

Horizontal Output Circuit

The pulse from pin 4 of terminal E-9 drives Q13, driving the Q14 horizontal output stage through the horizontal drive transformer T2. The horizontal output Q14 collector is connected to the deflecting yoke and the horizontal output transformer (H.O.T.).

The H.O.T. supplies DC power to the output transistors. One of the secondary windings forms the power supply for horizontal position adjustment with D11 and D12, and horizontal centering is controlled by IC1, Q16 and Q17. The horizontal centering control is effected by changing the potential on pin 3 of IC1 using the control pot. on the DB Board.

The other H.O.T. winding is the AFC pulse winding, supplied to the TA Board and P Board through terminals E-9 and E-5. Q10, Q11 and Q12, in the horizontal output power supply circuit, vary the raster size by changing the power supply voltage by means of the scanning mode.

Side Pincushion Circuit

The pulse-width-modulated AFC pulse (by the V period parabola signal) comes from pin 6 of terminal E-8, driving the gate of Q15.

The horizontal deflecting yoke current comes back as DC by HCC, and as AC to the horizontal pin distortion coil (H.P.C) L21 via S compensating capacitor C24 and the horizontal linearity transformer (H.L.T.). The switches consisting of D10 and Q15 are connected to L21 in parallel.

As the gate of Q15 is V period modulated, the energy of the horizontal retrace (for both ends of L21) becomes parabolic due to V period, its current resonating (C19 and L21) at the H period at the horizontal deflection interval, and is combined with the horizontal deflection current. Thus, side pin distortion is compensated and, at the same time, S compensating current is V period modulated and central portion linearity is also compensated.

Horizontal Linearity Distortion Compensation Circuit

Q21 is driven by the horizontal saw-tooth wave amplitude, modulated by the horizontal parabola waveform, supplied from pin 5 of terminal E-6.

It is amplified by the Q21, Q20, Q18 and Q19 feed back amplifier and drives the H.L.T.

The H.L.T. drive waveform is a saw-tooth wave of horizontal period and this voltage is supplied to the secondary side of the DY circuit of for impedance conversion. Thus, H. linearity is compensated by contraction in the damper section and extension in the transistor section.

G2 (Screen) and G4 (Focus) Circuits

A DC voltage of about 500V is available by rectifying the back pulse from the "hot" G2 tap, rectified by D19, with a feed-back power supply consisting of Q22, Q23, Q24, Q25, Q26 and IC3 (1/2).

The emitter voltage of Q23 (the screen voltage) is divided by R74 ~ R79 and drives IC3 (1/2). The output of this IC is filtered by R67 and C36, and drives Q26. The output of Q26 controls Q23 and Q24 through Q24 and Q25. The screen voltage is controlled by a pot through R80 from pin 2 of IC3 (1/2).

G4 (Focus voltage) provides DC voltage to the CRT, dividing high voltage from the H.V. Block by means of the focus control. The H.O.T. AFC pulse is integrated by C33 and L4, becoming the parabola wave, and is superimposed on the focus DC voltage via the Dynamic Focus Transformer (D.F.T.).

ABL Circuit

The high voltage current detected at the HV block goes to pin 4 of terminal E-5 via the P Board. After being intergrated by R88 and C37, it drives IC2 (1/2) through the IC2 (2/2) buffer.

If the beam current exceeds about 1.4 mA, IC2 (2/2) operates. The gain of IC2 (2/2) is about 100dB so the output becomes nearly +12V. This output is inverted by IC3 (2/2), and pin 2 of IC3 (1/2) is driven in the -12V direction. The base of Q26 thus goes more positive, the collector of Q24 falls and the emitter of Q23 also falls. In other words, the G2 voltage becomes lower and the CRT bias tends to cut off.

**3-14. POWER SUPPLY CIRCUIT
(F BOARD AND G BOARD)****AC Power Supply Voltage Switching**

The input AC voltage can be switched for 100, 120, 220 and 240V AC by switching the taps on the primaries of T901 and T902, either in parallel or in series.

Degauss

The CRT is degaussed by pressing the control panel DG switch. This causes damped AC to flow in the DG coil connected in series with a posistor.

+100V Power Supply

The +100V power supply is used by the deflection, high voltage regulators and so on. The rectified output of the +100V power supply also goes to the high voltage regulator output circuit. The circuit comprises D8, regulated voltage, the Q4 and Q5 error amplifier, the Q901 regulator, and the Q3 kick circuit.

F1 does not blow under rapid overload conditions (short circuit, etc.) because the circuit turns OFF.

As load protection, the regulator circuit does not work in the event of a CE short circuit of the regulator transistors or other causes, if the output voltage rises from 110V to 120V, the protective circuit of Q6 and D9 ~ D12 blows F1. When F1 is blown, the D6 LED lights. If the AC primary voltage is accidentally too high and the rectifier output voltage (across C3 and C4) reaches 160 ~ 180, the protective circuit consisting of Q1 and D5 operates and the fuse in the AC fuse holder is blown.

-150V Power Supply

The -150V power supply is used for the video out, and the circuit is constructed like the +100V circuit.

The regulated voltage consists of D19, the Q8 and Q9 error amplifier, the regulator circuit Q7 and Q902, and the starter circuit Q10.

If the fuse F2 is blown by a short circuit or some other cause, the D18 LED lights as an indicator.

±12V Power Supply

IC2 and IC3 are integrated circuits consisting of a temperature compensated reference voltage, error amp, regulator drive, and current limiter.

IC2 is used for the +12V power supply and drives the regulator transistor Q903. The -12V power supply consists of IC3 and the regulator transistor Q904.

As a reference potential, the -12V circuit uses the +12V potential, ±12V adjustment can be made by RV3 only.

±18V (A, B) Power Supply

The ±18V (A) power supply of is used for the vertical deflection output circuit. The circuit comprises a 3 terminal adjustable regulator plus a variable resistor for voltage adjustment. In other words, +18V (A) consists of IC4 and RV4 and -18V (B) of IC7 and RV7. The +18V (B) power supply is supplied to the horizontal deflection circuit and the regulator circuit. +18V (B) consists of IC5 and RV5, and -18V (B) IC7 and RV7.

+5V Power Supply

The +5V power supply is mainly used for the TTL power supply. The regulator uses the 3 terminal fixed regulator IC1.

Heater Power Supply

The CRT heater power supply is stabilized and supplied from the AC power supply. The circuit consists of the D48 reference potential, and the regulator transistors Q14 and Q15.

If the voltage rises abnormally due to a short circuit of Q14, Q13 turns ON and the heater is protected by blowing F3.

3-15. EHT AND CRT PROTECTOR (P BOARD)**EHT Regulator**

AFC pulses terminal P-7 drive Q1 to drive Q3 high tension output via Q2 and T-1. Q3 collector is connected to the fly-back transformer (F.B.T.), C10, D4, and D5 and functions the same as the horizontal output.

DC voltage is supplied through the F.B.T. The secondary side of the F.B.T. is boosted in the HV block and supplied to pin 5 of terminal P-5 as the error detecting voltage through an internal resistor dividing network. This voltage drives one of the bases of differential amp Q5 through buffer IC1 (1/2) and active filter IC1 (2/2). The pulse from Q2 collector drives Q7 through R30 and C21. When there is no pulse on the base of Q7, Q2 base is charged from the +12V power source through R33, R26, R27, and C20, and when Q7 is turned ON, C20 is discharged through R27 and Q7.

That is, the waveform becomes a saw-tooth, and is applied to the base of Q5. The output of IC2 (2/2) is applied to the other base of Q5 and a pulse is generated by the differential amp Q5. This pulse goes to gate Q4 through Q6 and T2. Therefore, the energy in the back pulse generated at Q4 collector is controlled and the energy to the F.B.T. is controlled. EHT regulation is provided by the above functions.

High Tension Hold-down Circuit

The protector output from pin 1 of the HV Block terminal P-5 passes through the buffer IC3 (1/2), and this output goes into comparator IC3 (2/2). The D11 voltage is divided and used as reference voltage for the (-) input and R59/60 are selected so that the high tension is held down to 28 kV \pm 100V. Output of IC3 (2/2) is connected to the gate of hold-down SW/Q8.

The anode of Q8 is connected to the collector of Q1 (high tension converter drive) and turning ON of Q8 cancels the drive pulse and the high tension is held down. Also, if the high tension falls for some reason, there is a circuit which holds down the high tension because of circuit faults; this is comparator IC2 (2/2). This output is also connected to the gate of Q8.

High Tension Current Hold-down Circuit

The high tension current hold-down circuit detects the current on the ground side (CRT current + high tension resistor current) of high voltage block as the voltage across R901 and R902, and activates comparator IC2 (1/2) and IC4 (1/2) when the current exceeds the rated current. Output of IC2 (1/2) is connected with gate Q8 and output of IC4 (1/2) is connected to Q10 gate respectively, and anodes of Q8 and Q10 are connected to Q1 (converter drive) to hold down the high tension by stopping the drive pulse.

CRT Protector

In order to prevent the CRT from burning due to the horizontal raster or vertical raster, the deflected horizontal pulse is used as the converter drive pulse. When the horizontal deflection is stopped, the high tension is held down to inhibit the vertical raster, and the vertical deflection output voltage is rectified by D12 to charge C36. When the potential across C36 exceeds the specified potential in the comparator IC4 (2/2), output potential of IC4 (1/2) goes from approximately +18 to 0V. This takes approximately 5 seconds to turn on the switch, during which time the high tension will not start up.

The output of IC4 is connected to the base of Q9, and Q9 collector is connected to Q1 collector through D9. If there is no vertical deflection output, output of IC4 will be about +18 and Q9 turns ON. Then, there will be no output from Q1 converter with the high tension dropping, thus there will be no horizontal raster.

H. AMP output Circuit

The H. AMP waveform produced on the DC Board is input from terminal P-4 pin 1 and amplified by an output amp consisting of Q12-Q17 and supplies H. AMP potential to the CRT high tension and focussing electrode, through the horizontal convergence transformer (H.C.T.) in the high voltage block.

Intermediate S-compensation Output Circuit

The vertical saw-tooth voltage controlled by the DC Board is input from P-9 and its horizontal period is switched through the two-way switch circuit consisting of Q11 and D17-D20. This output is supplied to the NECK ASS'Y coil to compensate for S-convergence in the mid-screen position in the vertical direction.

3-16. INPUT TERMINALS AND HOOK UP CIRCUIT (Q BOARD)

Input terminals are floating (from the chassis) both to minimize return loss and to improve hum rejection when 75 Ω terminated.

VIDEO A, VIDEO B, VIDEO TEST, EXT SYNC and the RGB terminals are connected to the Q Board using screened leads. The screen side is connected to the bases of Q1, Q11, Q21, Q31, Q41, Q51 and Q61 while the signal (hot) leads are connected to the emitters of the transistors. Thus, hum appearing at the bases and emitters of the transistors will be of the same phase and will cancel out. The signal connected to the VIDEO A terminal passes through an op amp with a gain of approximately 1 consisting of Q1, Q2, Q3, Q4, Q5 and Q6 and is supplied to the video switch. The VIDEO B and VIDEO TEST terminals are configured the same way as the VIDEO A terminal. The video switcher ICs IC1, IC2 and IC3 are controlled by the control signals from the R Board. The input terminal signal selected by the INPUT SW or remote terminal is output by pin 1 of IC3.

The combined crosshatch signal and the VIDEO A and VIDEO B output signal added by Q10 (A + B) is presented to the video switcher IC4. When the FUNCTION SW is ON, IC5 selects the output of IC4 instead of the input terminal signal (IC3 pin 1) and the crosshatch signal or the A + B signal is output. The output of IC5 is supplied to the Q11 connector (VIDEO OUT) through buffer Q71 and Q72. The signal connected to the R terminal goes through the op amp consisting of Q41, Q42, Q43, Q45 and Q46 and is supplied to the Q14 connector (R OUT) via the Q47 and Q48 buffer. The output of Q47 is feedback clamped to 0V by Q49 and IC7. The clamp position comes directly after the horizontal sync signal. The clamp pulse is formed in the pulse generator IC10 by the horizontal sync signal.

The G terminal and B terminal are supplied to the Q16 and Q17 connectors in the same way as the R terminal, and the G terminal output is also supplied to pin 5 of the IC2 video switch. The signal connected to the EXT SYNC terminal is supplied to pin 5 of IC6 by means of a circuit the same as that for the VIDEO A terminal. INT SYNC is selected either by the SYNC SW or the remote terminal and the IC6 control signal is output from the R Board.

The pin 3 signal (the VIDEO A, VIDEO B, VIDEO TEST or RGB terminal signals selected by the INPUT SW or the remote terminal [G. INT. SYNC in the case of RGB]) appears at pin 1 of IC6 and when EXT SYNC is selected, the pin 5 signal (EXT SYNC terminal signal) is output and supplied to the Q13 connector (SYNC OUT) in the same way.

3-17. REMOTE CIRCUIT (R BOARD)

INPUT SELECT & SYNC SELECT

IC1 is a 9 input 4 output decimal-BCD encoder. Input pins 1 through 7 are connected to the INPUT SW and remote terminals while the outputs A and B control video switcher ICs IC1, IC2 and IC3 so that the input signal selected by the INPUT SW or the Remote terminals is output from IC3. Also, when RGB is present, the A and B outputs are supplied to IC2 and this output controls the COMP/RGB switching on the BG Board.

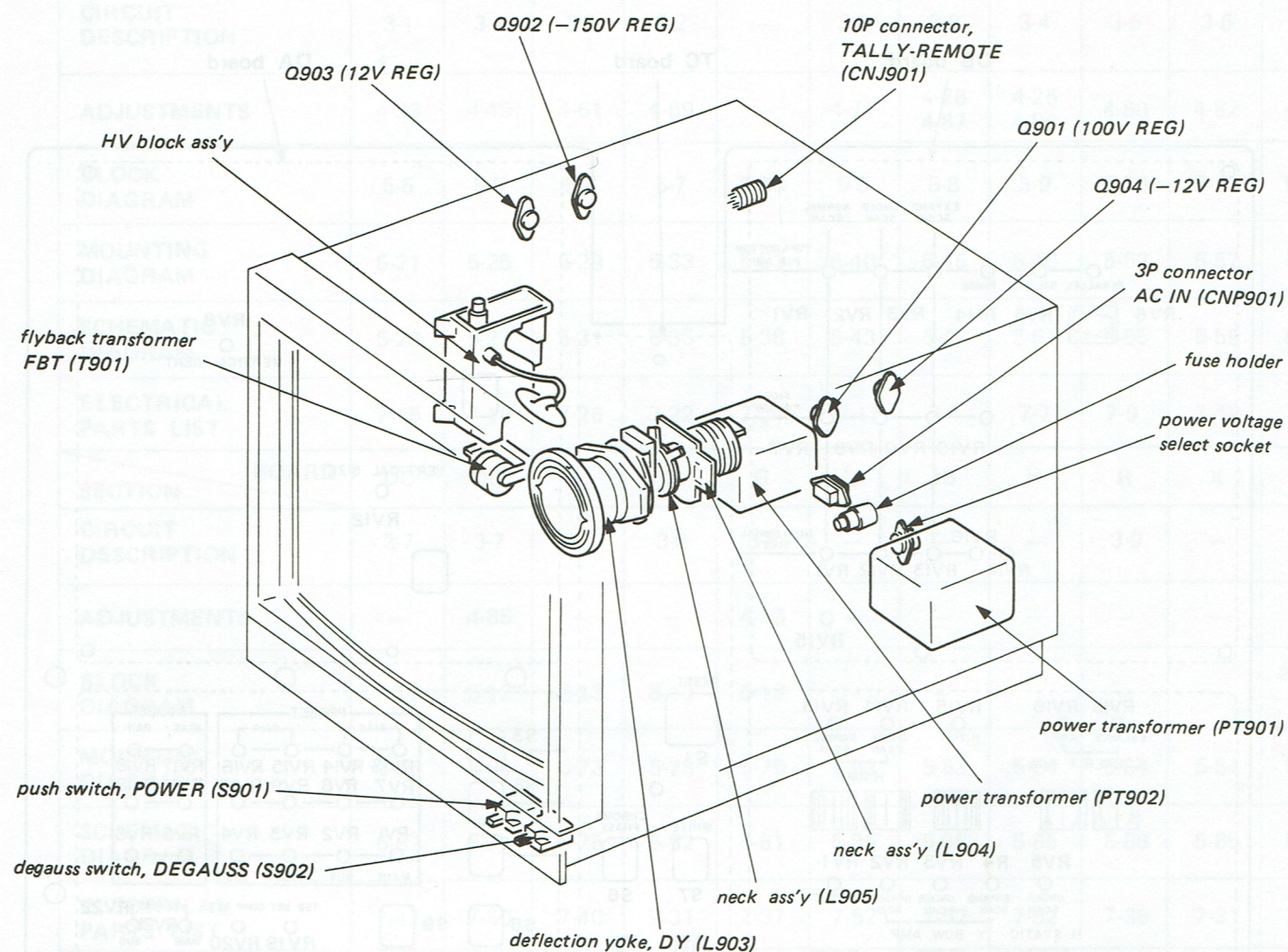
The SYNC SW and the remote terminal's SYNC terminal are connected to IC2 and the output of IC2 controls video switcher IC6 on the Q Board so that the SYNC signal selected by the SYNC SW or the remote terminals is output.

TALLY REMOTE CIRCUIT

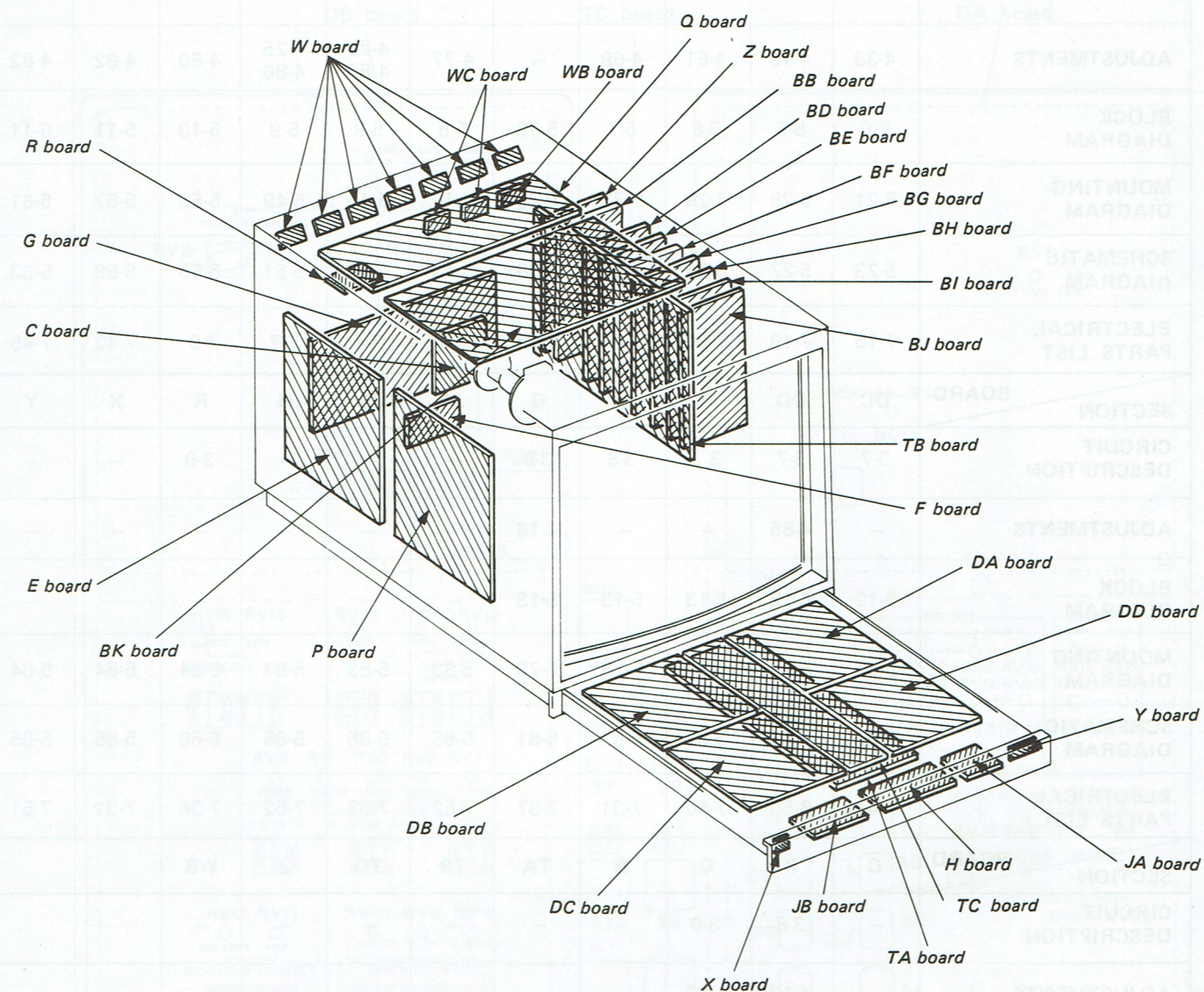
The signal coming from the remote terminal's Tally terminal fed to IC3, IC3 is a window comparator with a window of approximately -2.5V \sim -5V. When the voltage on the tally terminal is within approximately -2.5V \sim -5V, the output is high, while outside that range but within \pm 24V, the output is low and this output is supplied to the tallydrive circuit on the Do Board.

SECTION 4 ADJUSTMENTS

4-1. INTERNAL VIEW



4-2. CIRCUIT BOARDS LOCATION



4-3. SETUP ADJUSTMENT

When the picture tube has been replaced, make the following adjustments. Convergence and white balance are normally adjusted by VR's on the sub control panel.
(Refer to pages 5-3 and 5-6)

[Jigs, Tools and Measurement Equipment Required]

1. SIGNAL GENERATOR (TEKTRONIX 1411 series for PAL model or 1412 equivalent for PAL-M model)
2. COLOR ANALYZER
3. BRIGHTNESS METER

[Landing adjustment]

1. Connect signal generator and receive a white signal.
 2. Turn brightness and contrast controls fully clockwise.
 3. Point the set to the East (or West) and press the DEGAUSS switch for at least 5 seconds (until image swaying disappears) to demagnetize.
 4. Set the purity knob to mechanical center. (Fig. 1-1)
- Note:** Allow at least 5 minutes before using DEGAUSS switch again.

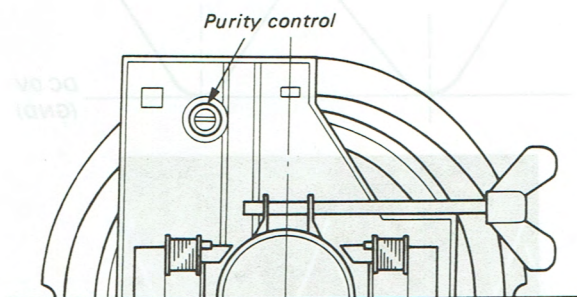


Fig. 1-1.

5. Advance DY as far as it goes to make close contact with the picture tube funnel.
6. Set the neck assembly in the position shown in Fig. 1-2.

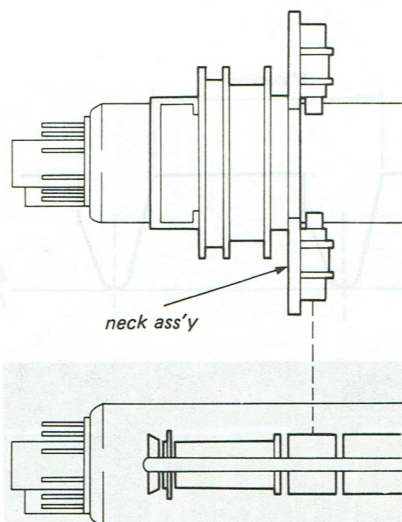


Fig. 1-2.

7. Set the screen to green only. (Turn S1 and S3 OFF and turn ON S2 on DD Board.)
8. Turn purity knob as shown in Fig. 1-3 to bring the green to the center of the screen.

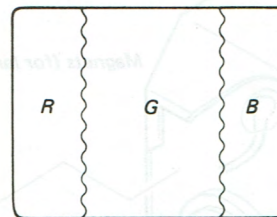


Fig. 1-3.

9. Retract DY and set the entire screen to a green raster.
10. Set the screen to red only and repeat items 8 and 9 above to make the entire screen a red raster (Turn OFF S2 and S3 and turn ON S1 on DD Board).
11. Set the screen to blue only and perform items 8 and 9 above to make entire screen a blue raster (Turn OFF S1 and S2 and turn ON S3 on DD Board).
12. Adjust DY tilt and tighten DY set-screw.
13. Secure the deflecting yoke with the spacers.

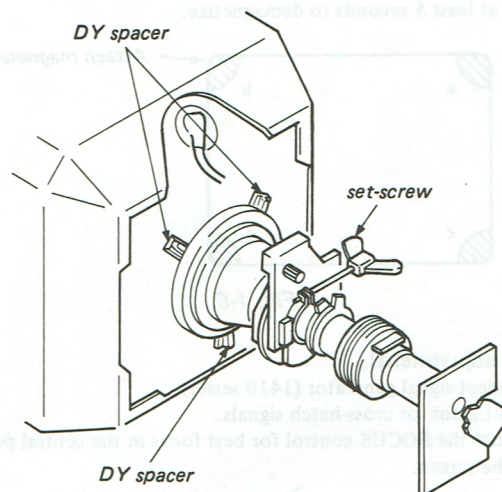


Fig. 1-4.

• Final check

After the adjustments have been completed point the set in all directions, (North, South, East and West) and check that there is no uneven color in any of them.

● If screen has uneven color in the corners:

1. Attach magnets on the pannel side uneven color occurs as shown in Fig. 1-5.

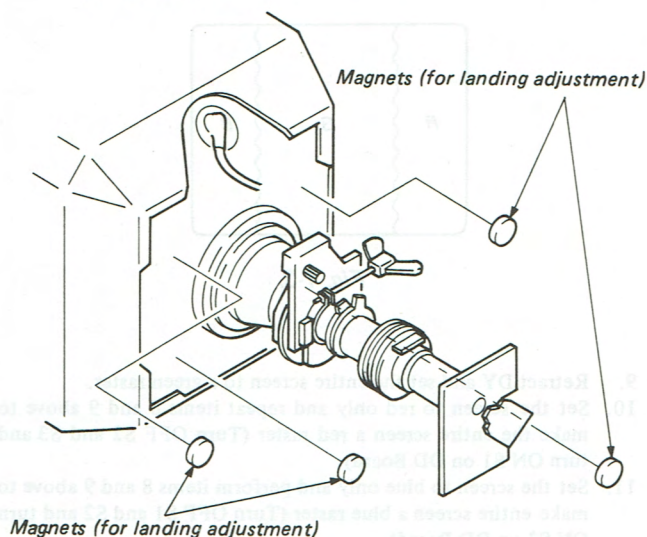


Fig. 1-5.

2. When magnets have on DY area, press DEGAUSS switch for at least 5 seconds to demagnetize.

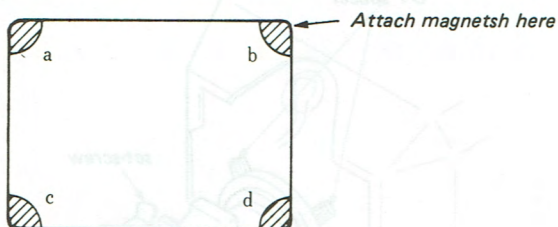


Fig. 1-6.

[Focus adjustment]

1. Connect signal generator (1410 series).
2. Input a dot or cross-hatch signals.
3. Adjust the FOCUS control for best focus in the central portion of the screen.

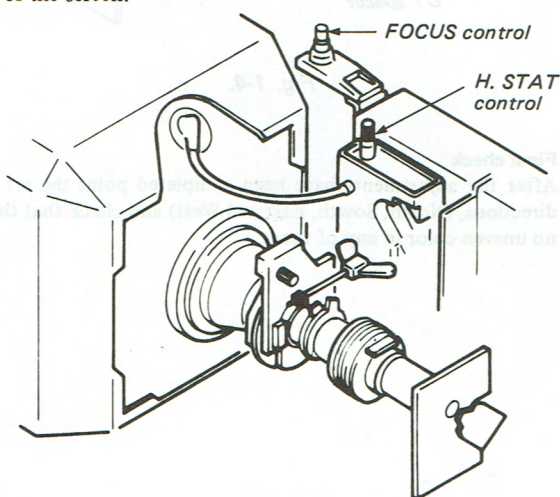


Fig. 1-7.

[DC clamp adjustment]

1. Display the built-in cross-hatch signal on the picture tube.
2. Turn RV16 and RV18 on the DC board fully counter-clockwise, and turn all the variable resistors to their mechanical centers.
3. Check that RV5 on the DC board is set to its mechanical center.
4. Connect the oscilloscope probe to TP1 on the DC board.
5. With the oscilloscope set to the DC range, turn RV6 on the DC board until the lower peaks of the waveform touch the DC 0V position. (Fig. 1-8)
6. Set the unit to the EXP mode (turn on the V DELAY switch).
7. Turn RV7 on the DC board until the lower peaks of the waveform of TP1 touch the DC 0V position. (Fig. 1-9)

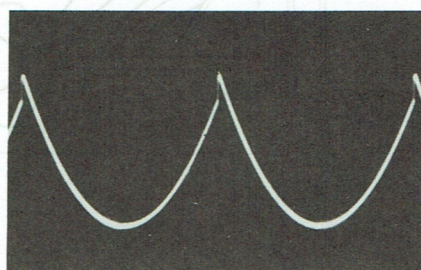
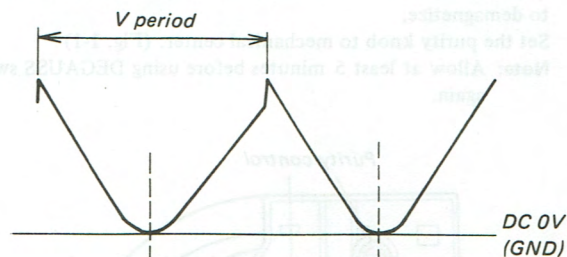


Fig. 1-8. (NORMAL MODE)

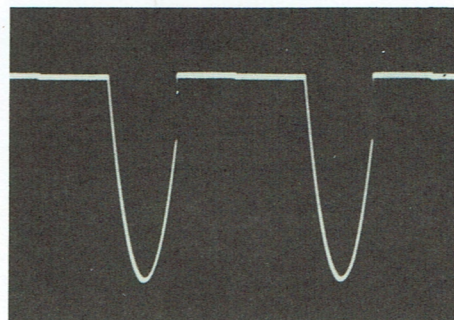
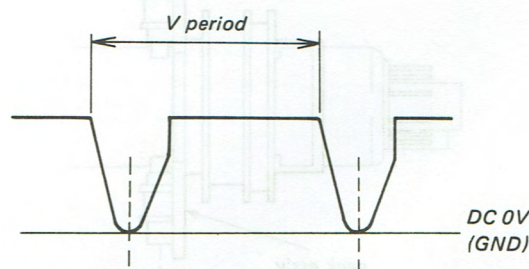


Fig. 1-9. (EXP MODE)

[Convergence adjustment]

Preparation

1. Connect the signal generator (1410 Series) to give dot on cross-hatch signals.
2. Align the contrast and brightness in an area where the dot or cross-hatch is easily seen.

NORMAL SCAN adjustment

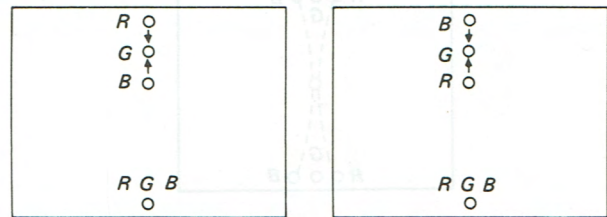
1. Static convergence

- Horizontal static convergence
 1. Adjust H. STAT to overlap R and G in the horizontal direction, at the center of the screen. (Fig. 1-7)
- Vertical static convergence
 1. Adjust V. STAT CENTER (RV10) on DC Board to overlap R and G in the vertical direction, at the center of the screen.

2. Dynamic convergence

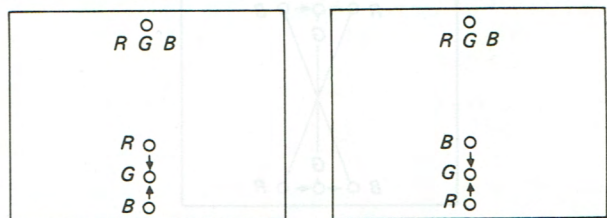
1. Adjust V STAT TOP (RV9) and V STAT BOTTOM (RV8) on DC Board to align R.G.B. at top and bottom of screen center.

V STAT TOP



Adjust RV9 so that R.G.B. at top of screen overlap.

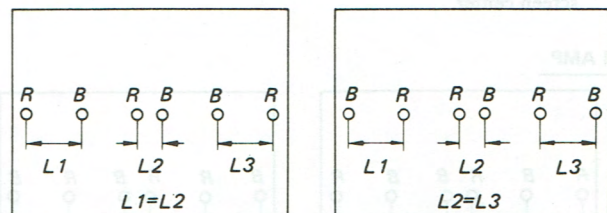
V STAT BOTTOM



Adjust RV8 so that R.G.B. at bottom of screen overlap.

2. Adjust H AMP (RV13) on DC Board to make equal amounts of R.G.B. misconvergence right and left of screen center.

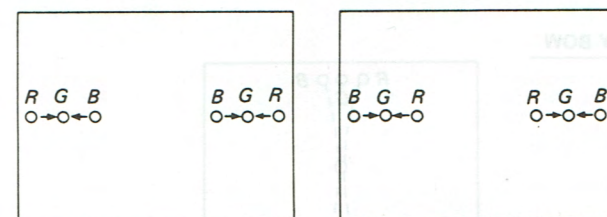
H AMP



Adjust RV13 so that $L1 = L2$ and $L2 = L3$.

3. Adjust H TILT (RV15) on DC Board and align R.G.B. right and left of the center of screen.

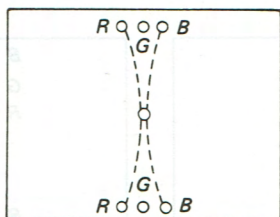
H TILT



Adjust RV15 so that R.G.B. overlap.

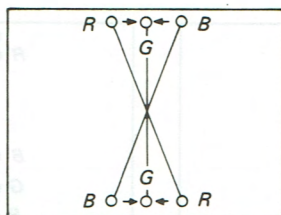
- Adjust Y BOW (RV2) to align R.G.B. at top and bottom of the center of screen.

Y BOW



- Adjust Y BOW TILT (RV1) on DC Board to align R.G.B. at top and bottom of screen center.

Y BOW TILT

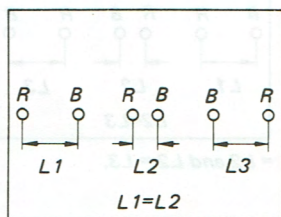


Adjust RV1 to converge R.G.B.

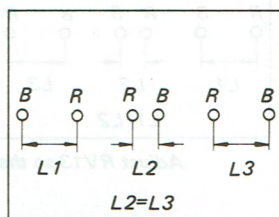
Under scan adjustment

- Turn ON the under scan switch to set to UNDER SCAN MODE.
- Adjust H STAT (RV5) on DC Board to align R.G.B. at center of screen.
- Adjust H AMP (RV14) to align R.G.B. at right and left of screen center.

H AMP



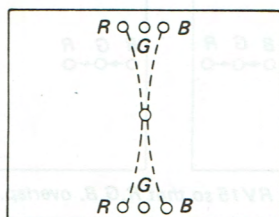
Adjust RV14 so that $L1 = L2$ or $L2 = L3$.



$L2 = L3$

- Adjust Y BOW (RV3) on DC board to align R.G.B. at top and bottom of screen center.

Y BOW



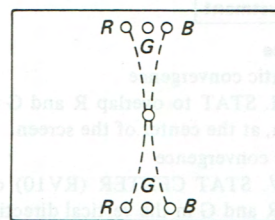
Adjust RV3 to align R.G.B.

- Turn OFF under scan switch to set to NORMAL MODE.

Expand scan adjustment

- Turn ON V DELAY switch to set to EXPAND MODE.
- Adjust Y BOW (RV4) on DC Board to align R.G.B. at top and bottom of screen center.

Y BOW

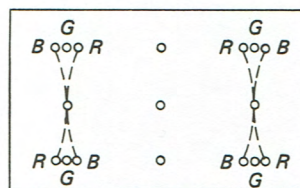


Adjust RV4 to align R.G.B.

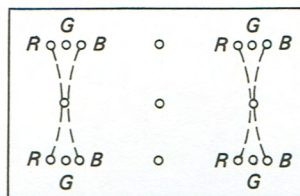
- Turn OFF V DELAY switch to set to NORMAL MODE.

Corner convergence adjustment

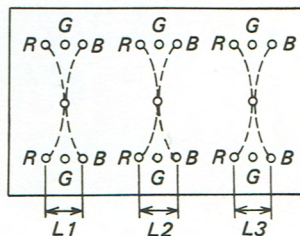
- Adjust RV16 (AMP) and RV18 (BALANCE) on DC Board to align R.G.B. at top and bottom screen corners. (CORNER Y BOW)



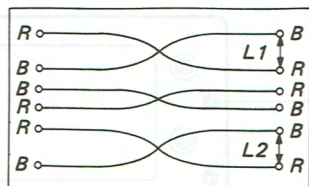
Adjust RV18 until R, G and B converge.



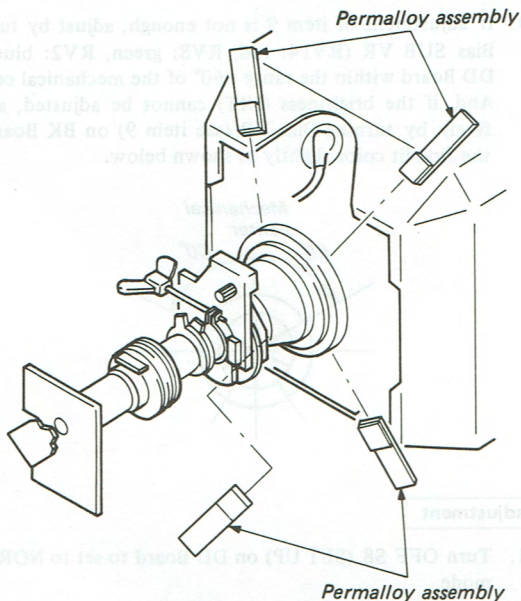
Adjust RV16 so that $L1 = L2 = L3$.



- Adjust RV16, and if Y BOW distortion still remains, adjust RV2 (NORMAL SCAN), RV3 (UNDER SCAN) and RV4 (EXPAND SCAN) to align R, G and B.
- When a pattern similar to the one shown below is obtained, adjust RV12 (BALANCE) until L1 and L2 become equal.
- Adjust RV11 (AMP) to align R, G and B on the upper and the lower parts of the screen.

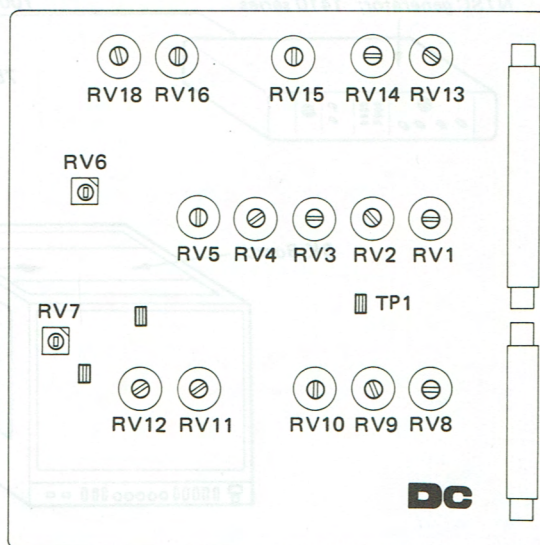


- Repeat 3 and 4 above for correct tracking adjustment. If 3 and 4 can not give satisfactory adjustment, change P10 micro-connector on the P Board with P11, and repeat 3 and 4.
- For misconvergence at corners, insert permalloy between the deflection yoke and funnel to compensate.



- Set S10 and S11 on DC Board to built-in crosshatch side and check the convergence.

DC Board



[White balance adjustment]

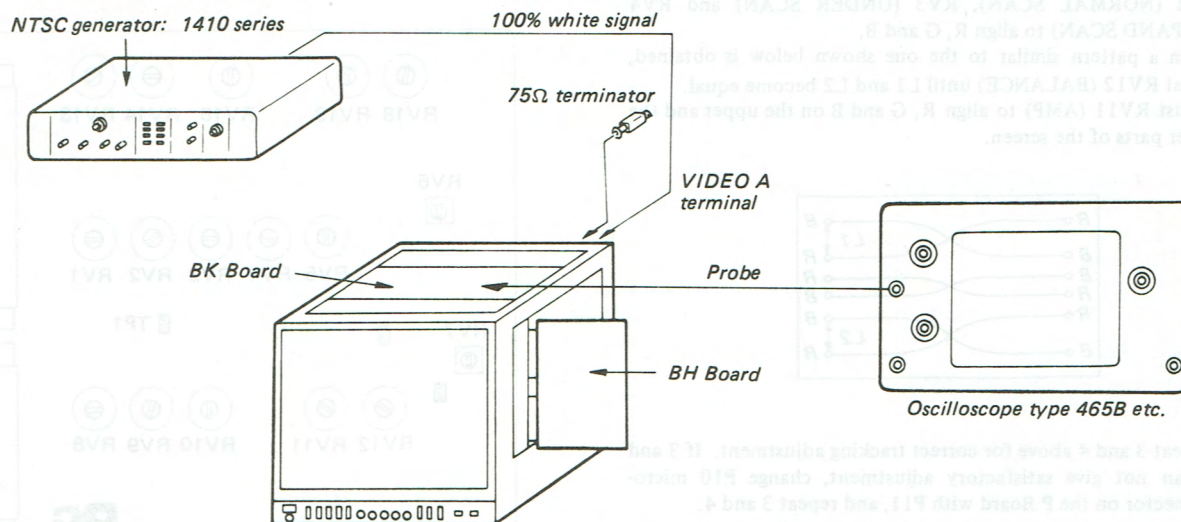
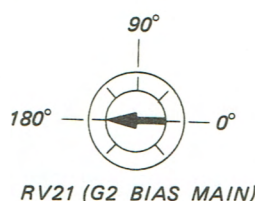


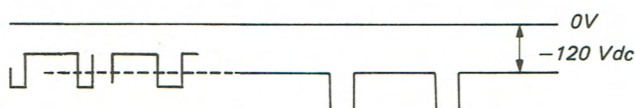
Fig. 1-11.

Bias adjustment

1. Connect as shown in Fig. 1-11. (Pull out BH Board and re-insert using an extension board.)
2. Turn ON the power of the set and set INPUT switch to A, SYNC switch to INT, and MODE switch to AUTO, and confirm that all other control switches are at PRESET. (The set must be warmed up for more than 30 minutes.)
3. Turn S8 (SET UP) on the DD Board ON for SET UP mode and set S12 (COLOR TEMP) to PRESET.
4. Turn RV3, RV103 and RV203 on the BK Board fully counterclockwise to make the screen black. Set RV1, RV101 and RV201 on the BK Board to their mechanical centers.
5. Set RV21 (G2 BIAS MAIN) on the DD Board to 180° as shown below.



6. Set RV3, RV103 and RV203 (Gain) on the BH Board to their mechanical centers.
7. On the BK Board, turn RV1, RV101 and RV201 (Bias) and adjust to 0.5 NIT, 6500°K + 8MPCD.
8. Connect an oscilloscope probe to the TP3 (RED) TP103 (GREEN) TP203 (BLUE) test points on the BK Board and adjust the DD Board RV21 (G2 BIAS MAIN) so that the lowest terminal voltage is -120V DC.

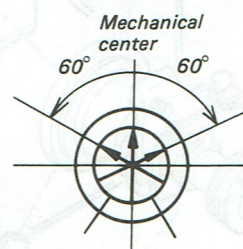


9. Connect the oscilloscope probe to the positions shown below and adjust each CLAMP VR for +8V DC under the SET UP condition.

BK Board

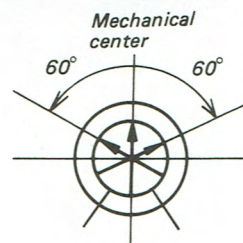
RED	IC3	Pin 7	RV3
GREEN	IC103	Pin 7	RV103
BLUE	IC203	Pin 7	RV203

10. If adjustment of item 9 is not enough, adjust by turning Bias SUB VR (RV14: red, RV8: green, RV2: blue) on DD Board within the range $\pm 60^\circ$ of the mechanical center. And, if the brightness (NIT) cannot be adjusted, adjust finely by turning Bias VR (see item 9) on BK Board for the first lit color slightly as shown below.



Gain adjustment

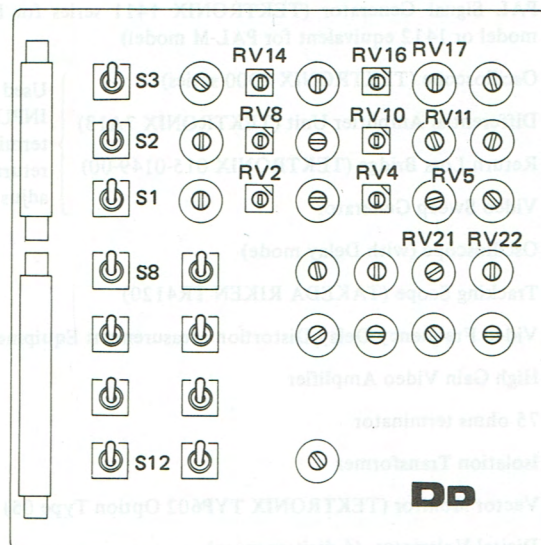
11. Turn OFF S8 (SET UP) on DD Board to set to NORMAL mode.
12. Turn Gain VR (RV3: red, RV103: green, RV203: blue) on BH Board to adjust the brightness at HIGH LIGHT to be 103 NIT and the color temperature to be 6500°K + 8MPCD.
13. If adjustment of item 12 is not enough, adjust by turning Gain SUB VR (RV16: red, RV10: green, RV4: blue) on DD Board within a range $\pm 60^\circ$ of the mechanical center.



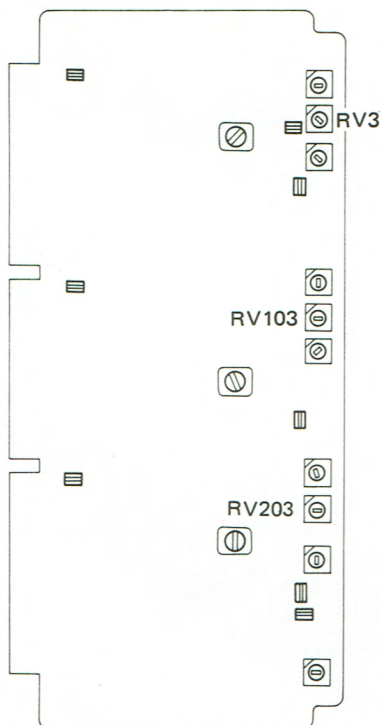
ADJUST side white balance adjustment

16. Flip S12 (COLOR TEMP) on DD Board to ADJUST and turn ON S8 (SET UP) for SET UP MODE.
17. Turn OFF S2 (SCREEN G) and S1 (SCREEN B) to show red only.
18. Flip S12 (COLOR TEMP) on DD Board from ADJUST to PRESET and alternatly flip to ADJUST and PRESET until the color on screen for ADJUST side and PRESET side is the same, by turning ADJUST BIAS VR RV17 (red) on DD Board.
19. Turn OFF S1 (SCREEN R) and turn ON S2 (SCREEN G) on DD Board and turn ADJUST Bias VR RV11 (green) on DD Board as described in item 16.
20. Turn OFF S2 (SCREEN G) and turn ON S3 (SCREEN B) on DD Board and turn ADJUST BIAS VR RV5 (blue) on DD Board as described in item 16.
21. Turn OFF S8 (SET UP) on DD Board and set to NORMAL MODE. (HIGH LIGHT)
22. Repeat steps described in items 15–18, and adjust until the color on ADJUST side and PRESET side is the same.

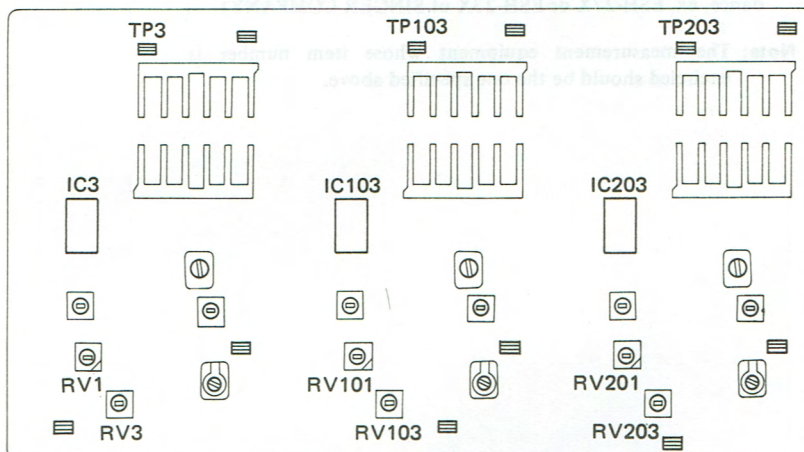
DD Board



BH Board



BK Board



• Jig, Tool and Measurement Equipment Required.

- ① PAL Signal Generator (TEKTRONIX 1411 series for PAL model or 1412 equivalent for PAL-M model)
- ② Oscilloscope (TEKTRONIX 7000 series)
- ③ Differential Amplifier Unit (TEKTRONIX 7A13)
- ④ Return Loss Bridge (TEKTRONIX 015-0149-00)
- 5 Video Sweep Generator
- 6 Oscilloscope (with Delay mode)
- ⑦ Tracking Scope (TAKEDA RIKEN TR4120)
- 8 Video Frequency Delay Distortion Measurement Equipment
- 9 High Gain Video Amplifier
- 10 75 ohms terminator
- 11 Isolation Transformer
- ⑫ Vector Monitor (TEKTRONIX TYP602 Option Type 05)
- 13 Digital Voltmeter (4 digit or more)
- 14 Attenuator
- 15 Linearity Gauge
- 16 CCD (Charge Coupled Device) Bias Adjust Signal Generator
- 17 Electrostatic voltmeter ($2 \times 10^9 \Omega$ or more input impedance, ex, ESH-27X or ESH-23X of SINGER COMPANY)

Used for
INPUT
terminal
return loss
adjustment.

Note: The measurement equipment whose item number is encircled should be the one specified above.

ADJUST side white balance adjustment

16. Flip S12 (COLOR TEMP) on DD Board to ADJUST and turn ON S4 (SET UP) for SET UP MODE.

17. Turn OFF S1 (SCREEN G) and S1 (SCREEN R) to show red only.

18. Flip S12 (COLOR TEMP) on DD Board from ADJUST to PRESET and slantably flip to ADJUST and PRESET until the color on screen for ADJUST side and PRESET side is the same, by turning ADJUST BIAS VR R/V1 (red) on DD Board.

19. Turn OFF S1 (SCREEN R) and turn ON S2 (SCREEN G) on DD Board and turn ADJUST BIAS VR R/V1 (green) on DD Board as described in item 16.

20. Turn OFF S2 (SCREEN G) and turn ON S3 (SCREEN B) on DD Board and turn ADJUST BIAS VR R/V2 (blue) on DD Board as described in item 16.

21. Turn OFF S3 (SET UP) on DD Board and set to NORMAL MODE (HIGH LIGHT).

22. Repeat steps described in items 12-18, and adjust until the color on ADJUST side and PRESET side is the same.



4-4. HIGH VOLTAGE ADJUSTMENT

1. Extract the P-13 connector on P board.
2. Switch the set on, and set the BRIGHTNESS and CONTRAST controls to PRESET (Click) and display a color bar signal.

High Voltage Hold Down Adjustment (R59, R60)

Note: This adjustment must be made if HV Block, D11, R58, R59 or R60 are replaced.

1. Connect 10 k Ω variable resistor in parallel with R76 (or R77) on P Board.
2. Adjust the 10 k Ω VR and check that the H.V. Hold-down circuit operates and that the picture goes off when the H.V. becomes 28.0 ± 0.1 kV.
3. If step 2 cannot be attained, R59 and R60 have to be reselected so as to come within the standard. (Standard: 28.0 ± 0.1 kV)
4. Remove the 10 k Ω VR connected in parallel with R76 (or R77) in step 1.
5. Adjust the H.T. to 27.0 ± 0.1 kV using the RV1 of P Board.

Confirmation of High Voltage Hold Down

1. Adjust CONTRAST and BRIGHTNESS controls to minimum (Fully counterclockwise direction to just before the click).
2. Connect an external power supply (Max 30V: more than 21V) and a digital voltmeter between pin 2 (R901 side) of HV Block and ground.
3. Gradually increase the voltage from the external power supply and check that the Hold-down circuit operates at a voltage of -20.4 V DC or less and that the picture goes off. Short R901 and gradually raise the external power supply voltage. High Voltage Hold-down should operate within -10.9 V.
4. Remove the external power supply and confirm that the high voltage value is 27.0 ± 0.1 kV when the power supply of set is applied again.

If a digital multimeter is used, the procedure is the same as when a high voltage meter is used. Use the table below for connecting voltages at pin 1 of IC3 on P Board into equivalent high voltage.

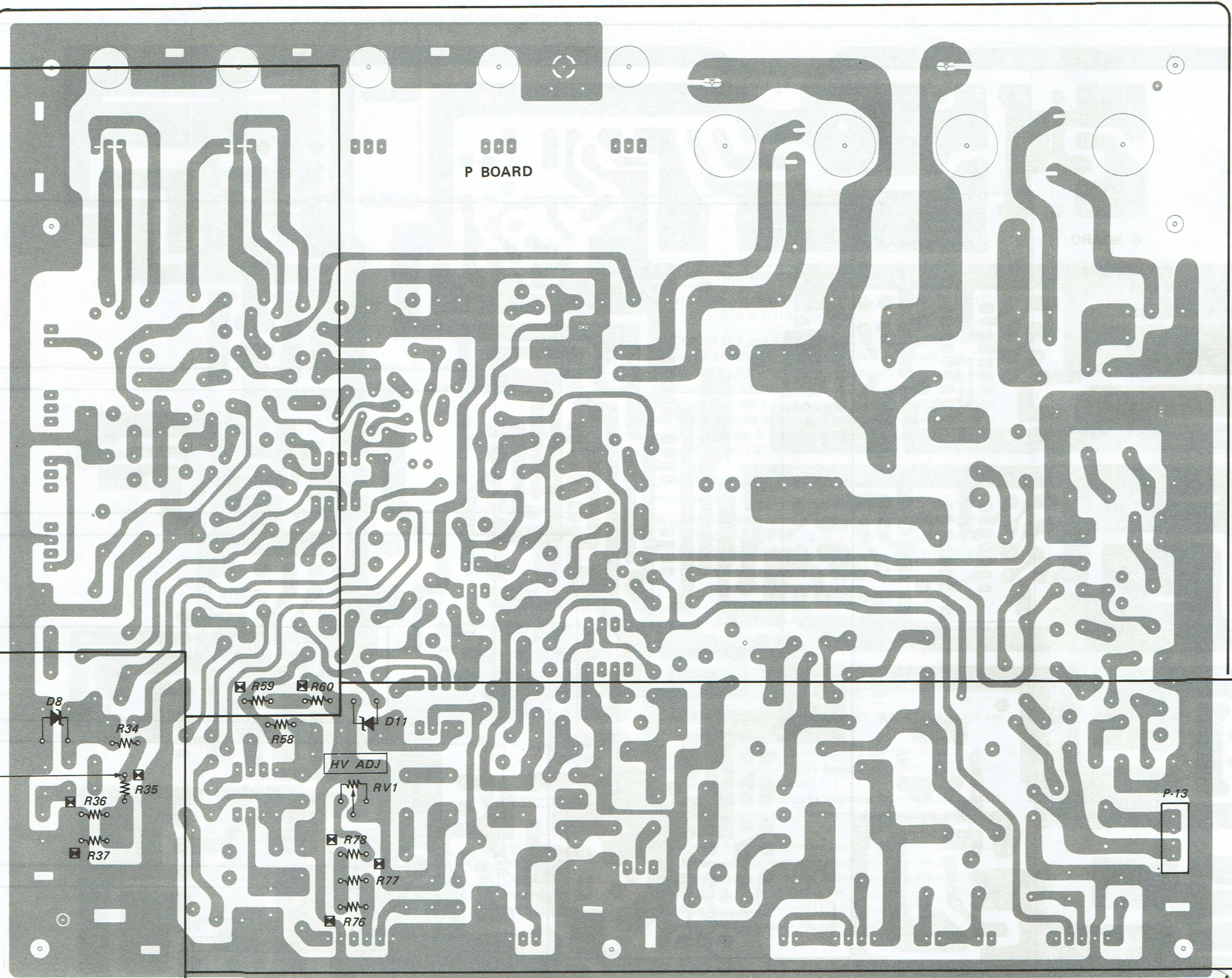
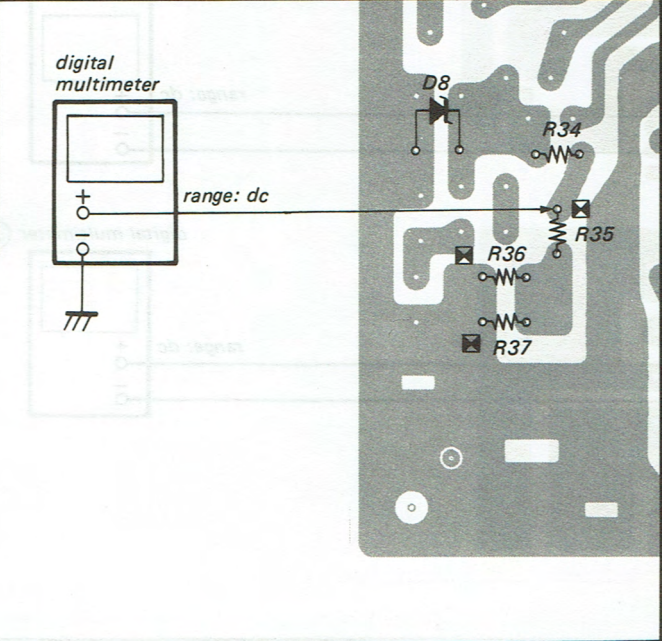
High voltage value	Voltage at IC3 pin 1
27.0 kV	7.939V
27.4 kV	8.056V
27.6 kV	8.115V
27.9 kV	8.203V
28.1 kV	8.262V

Check that power supply of pin 1 for IC3 is finally 7.939V without fail.

Error Amp Reference Voltage Adjustment (R35, R36, R37)

Note: Make this adjustment if D8, R34, R35, R36 or R37 are replaced.

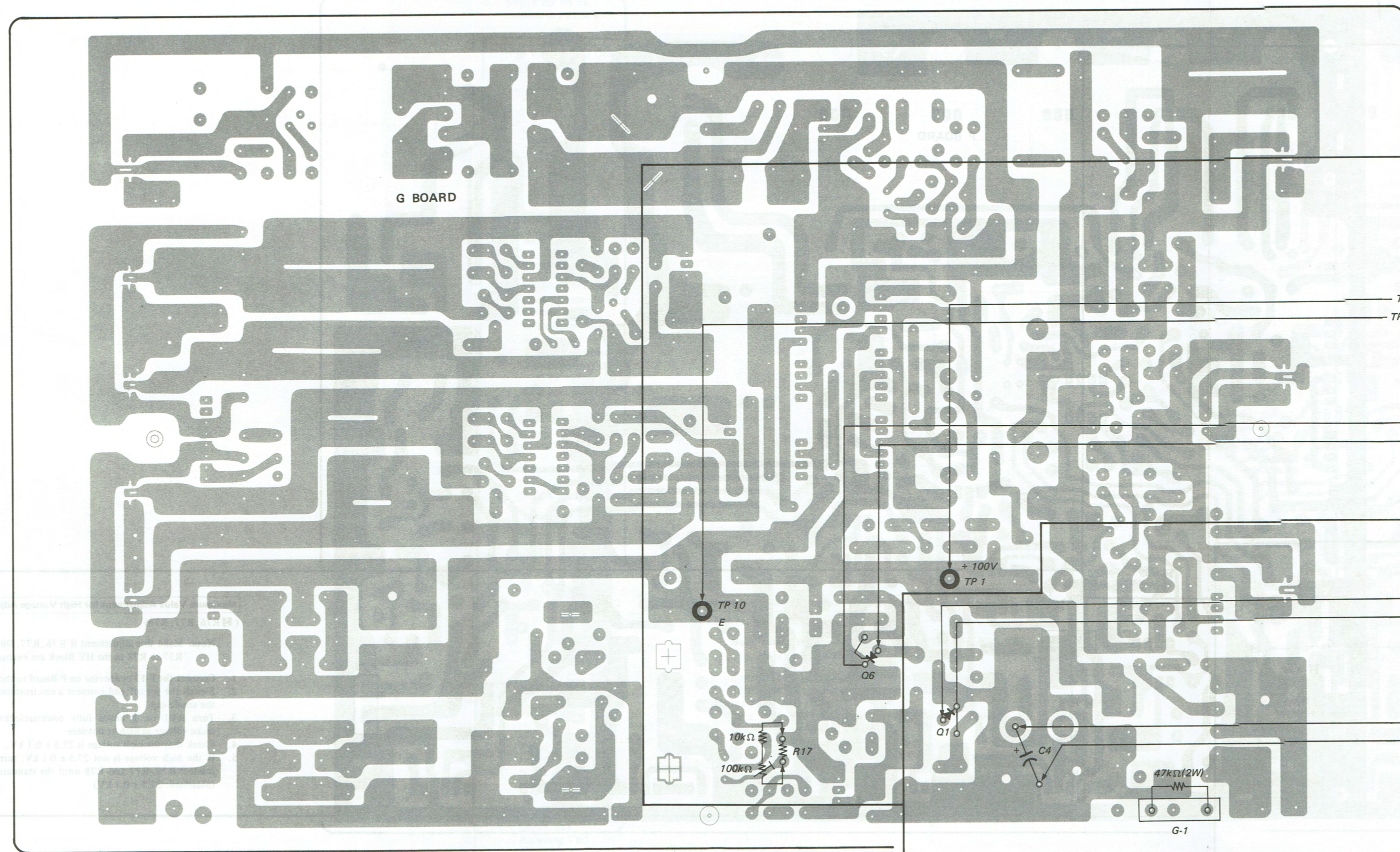
1. Check that the voltage is 10.0 ± 0.1 Vdc by connecting a digital multimeter of the point of intersection of R35 and R34 on P Board.
2. If the voltage is not 10.0 ± 0.1 Vdc, switch the set off and reselect R35, R36 and R37 until the specified voltage can be obtained. (Standard: 10.0 ± 0.1 Vdc)
3. Check out "Maximum Value Adjustment for High Voltage Adjusting VR" at right.



Maximum Value Adjustment for High Voltage Adjusting VR (R76, R77, R78)

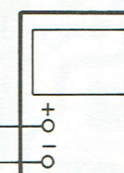
Note: Make this adjustment if R76, R77, D8, R34, R35, R36, R37 or R78 in the HV Block are exchanged.

1. Connect the P-13 connector on P Board to the board.
2. Switch the set off and connect a electrostatic voltage meter to the anode cap.
3. Turn RV1 on P board fully counterclockwise direction to make voltage as high as possible.
4. Check that the high voltage is 27.5 ± 0.1 kV.
5. If the high voltage is not 27.5 ± 0.1 kV, turn the set off, and reselect R76, R77 and R78 until the standard can be attained. (Standard: 27.5 ± 0.1 kV)

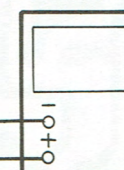


G BOARD

digital multimeter (B)



digital multimeter (A)



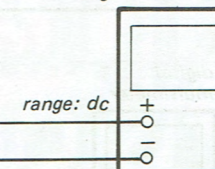
G Board +100V Regulator out Protector Circuit Check

Note: Check out the following if Q6, D9, Q10, Q11, D12, R19, R20 or R21 are replaced.

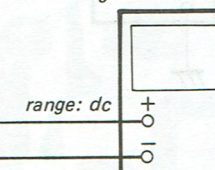
1. Set CONTRAST and BRIGHTNESS VRs to PRESET position.
2. Connect a 100k Ω VR and 10k Ω resistor in parallel with R17.
3. Set the 100k Ω VR resistance to maximum.
4. Switch POWER SW on.
5. Gradually turn the 100k Ω VR and raise the 100V line voltage and check that the digital voltmeter A voltage falls suddenly at a digital voltmeter B voltage of +135.5V or less.
6. Switch POWER SW off and remove the VR and resistor connected to R17.
7. Check that a normal picture appears when the POWER SW is switched on.

Note: If the voltage on TP-1 does not become 135.5V and the voltage reading on digital voltmeter (A) does not drop suddenly, increase the AC voltage using a variable transformer.

digital multimeter ①



digital multimeter ②



G Board Power Supply Protector Circuit Check

Note: Check out the following if R1, R2, R3, D5 or Q1 are replaced.

1. Set controls to PRESET and display a color bar signal.
2. Remove connector G1 on G Board and connect a 47 k Ω , 2W resistor between pins 1 and 3.
3. Connect digital multimeter ① between the + and - sides of C4 and digital multimeter ② between the anode and cathode of Q1.
4. Connect a variable transformer to the AC primary, and increase the AC voltage gradually after switching on the set.
5. When the voltage on digital multimeter ② (connected to the anode and cathode of Q1) drops rapidly, read the voltage on digital multimeter ① (connected to + and - of C4).
6. Check that the voltage at this time is 165 ~ 186V.

Frequency characteristics adjustment probe calibration

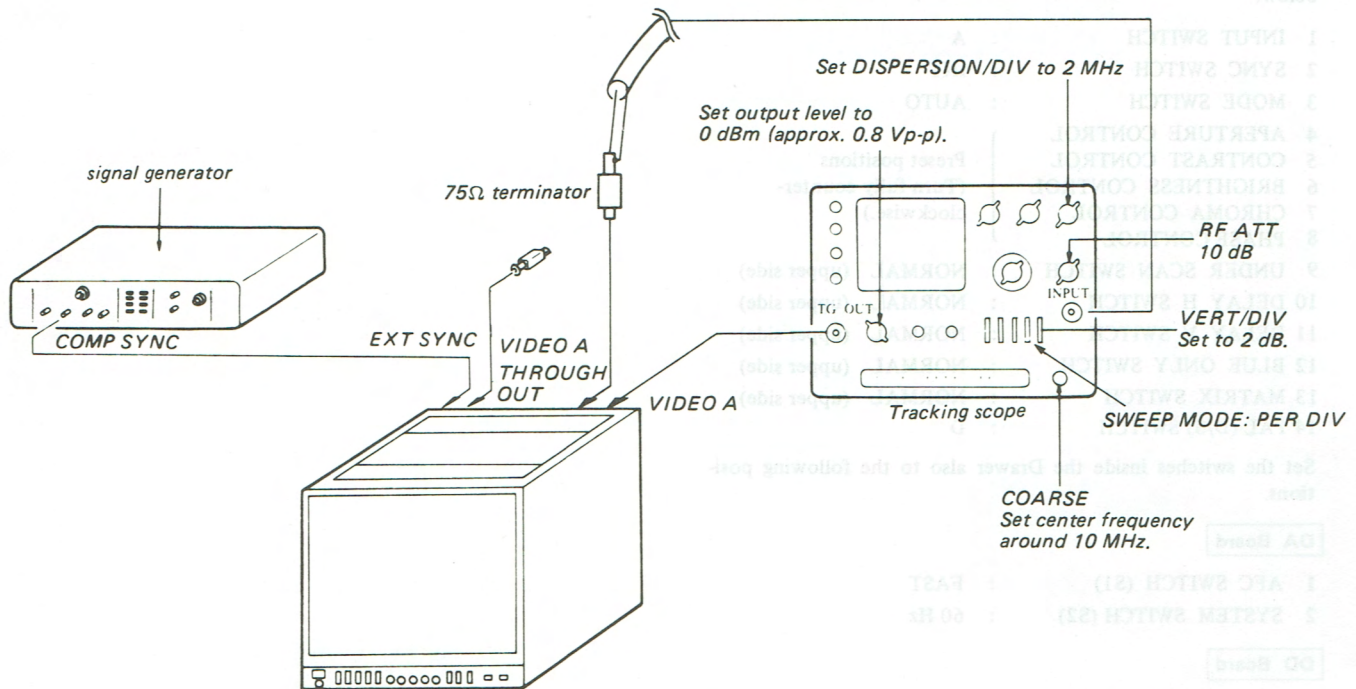


Fig. 1.

1. Connect as shown in Fig. 1. (Turn OFF power for the set)
2. Set each knob on tracking scope according to Table 1.
3. Connect a probe to INPUT of tracking scope and connect it to the THROUGH/OUT of a 75Ω terminator resistor connected to the VIDEO A terminal of the set.
4. Connect COMP SYNC from signal generator with EXT SYNC of the set terminated in 75Ω.
5. The entire range of F characteristics (0–15 MHz) measured on the tracking scope must be flat.
6. If the F characteristics range is not flat according to item 5, calibrate the probe to make it flat.

CAUTION: When using the calibrated probe to measure F characteristics with another scope the probe must be re-calibrated each time.

Table-1

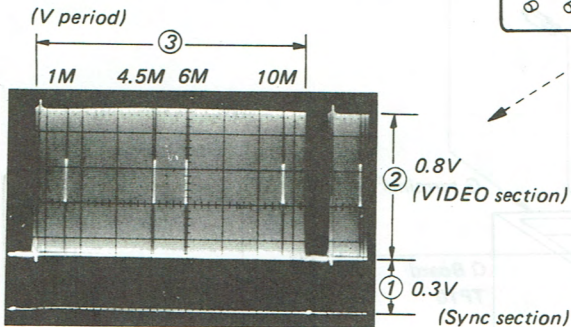
Tracking scope knobs	Setting
RF ATT	10 dB
VERT/DIV	2 dB
SWEEP MODE	PER DIV
DISPERSION/DIV	2 MHz
COARSE	0 MHz at scope left end
OUTPUT LEVEL	0 dB

1. INPUT Terminal Return-loss Adjustment

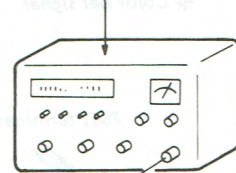
VIDEO OUT SIGNAL

(Match 75Ω terminator output of Video Sweep Generator as shown below.)

- ① Adjust SYNC LEVEL knob.
- ② Adjust OUTPUT LEVEL and SETUP LEVEL knobs.
- ③ Adjust SWEEP WIDTH knob.



video sweep generator



TRIG. OUT

VIDEO OUT

RED

oscilloscope (7000 series)

MAIN TRIG IN

7B53A

7A13 (differential amplifier unit)

return-loss bridge

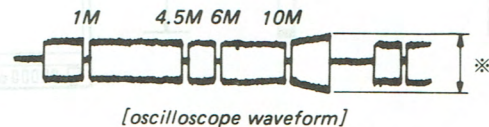
GRN

Fig. 1-1.

1. Connect as shown in Fig. 1-1.
2. Set the +INPUT of 7A13 Unit to DC and the -INPUT to GND. The VIDEO part of the SWEEP signal should be 0.4V_{p-p}.
3. Set the -INPUT side of the 7A13 Unit also to DC and set the VOLT/DIV knob to the 1mV range. Adjust the BAL of Return Loss Bridge so that the output waveform on the oscilloscope is a minimum (less than 1 mV_{p-p}). (Fig. 1-2)
4. Disconnect the 75Ω terminator for the UNKNOWN (red) side of the Return Loss Bridge, and connect the cable and terminator to the VIDEO A Terminal of the Set. (Fig. 1-3)
5. Turn on POWER SW, and turn INPUT SW to A and SYNC SW to INT.
6. Adjust the output waveform to a minimum (less than 2mV_{p-p} in the range 0 ~ 10 MHz) by turning Q Board CV1.
7. Similarly adjust each of the terminals, VIDEO B (CV4), TEST (CV7), EXT SYNC (CV10), R (CV11), G (CV14) and B (CV17).

Set INPUT SW as follows:

During adjustment of VIDEO B terminal B
 During adjustment of each terminals, R. G. B RGB
 During adjustment of TEST terminal TEST



[oscilloscope waveform]

Adjust BAL of return-loss bridge so that marked with * becomes as flat as possible in a range of 0 to 10MHz and minimum (below 2mV_{p-p}).

Fig. 1-2.

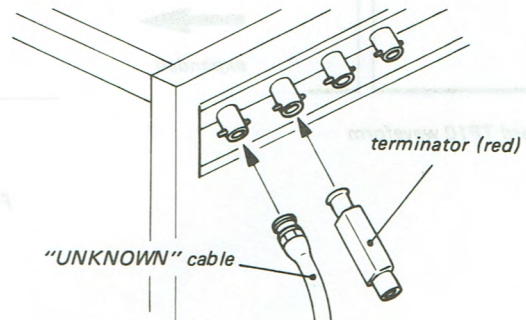
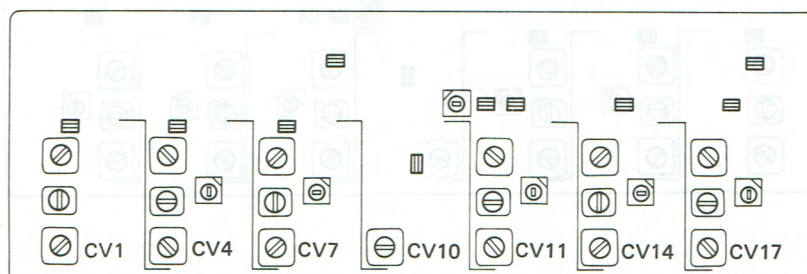


Fig. 1-3.

Q Board



2. Q Board Clamp Pulse Width Adjustment

1. Connect as shown in Fig. 2-1.
2. Turn on the POWER SW of the set, and turn the INPUT SW to "RGB" and SYNC SW to "INT".
3. Adjust the CLAMP PULSE width to $3.0 \pm 0.1 \mu\text{s}$ by Q Board RV6. (Fig. 2-2)

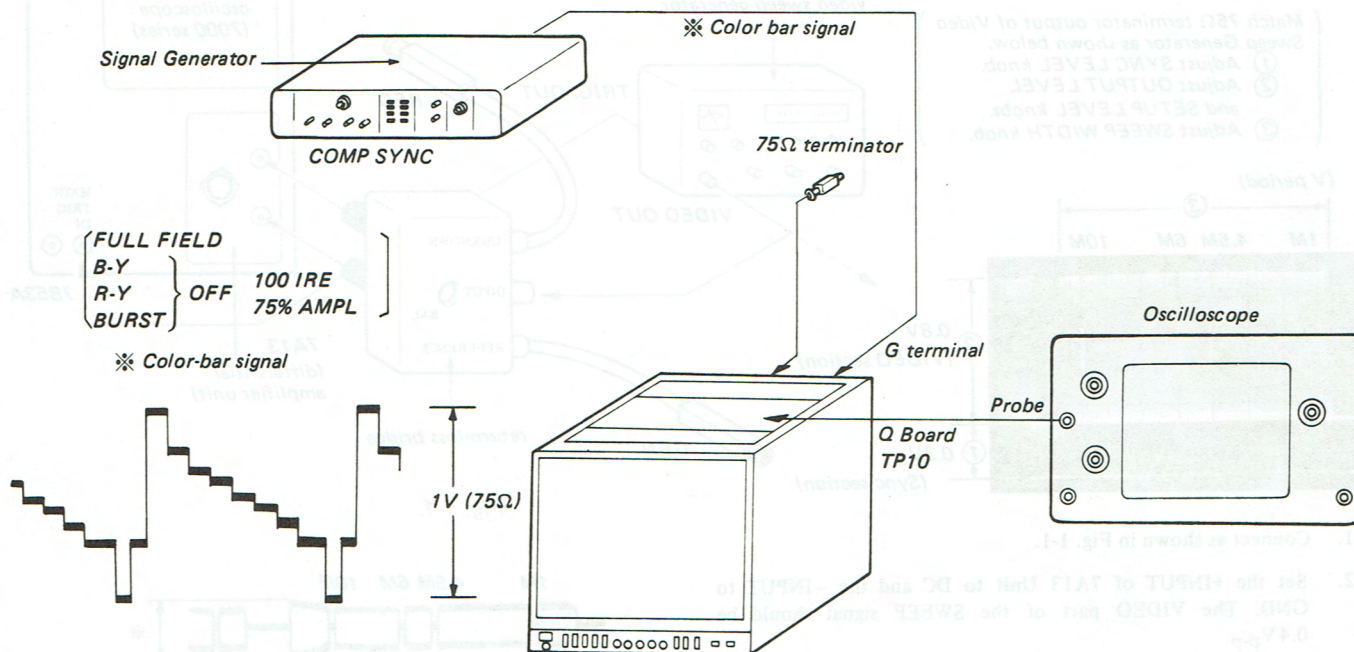


Fig. 2-1.

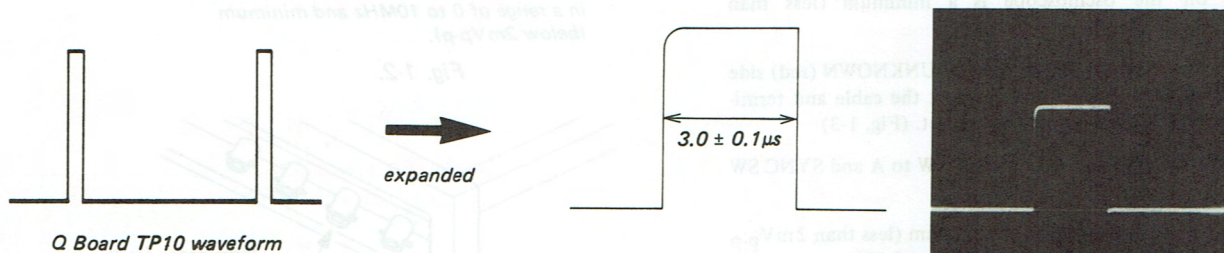
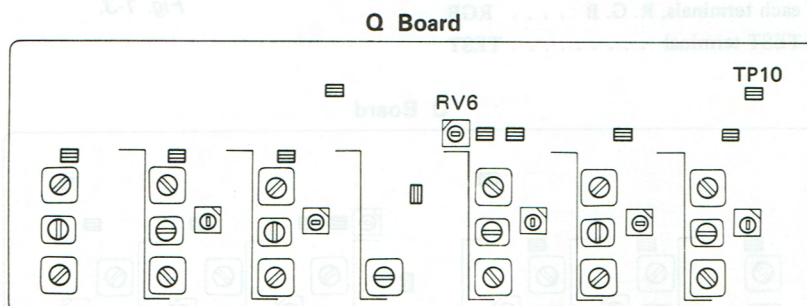


Fig. 2-2.



3. Q Board Input Circuit Level Adjustment

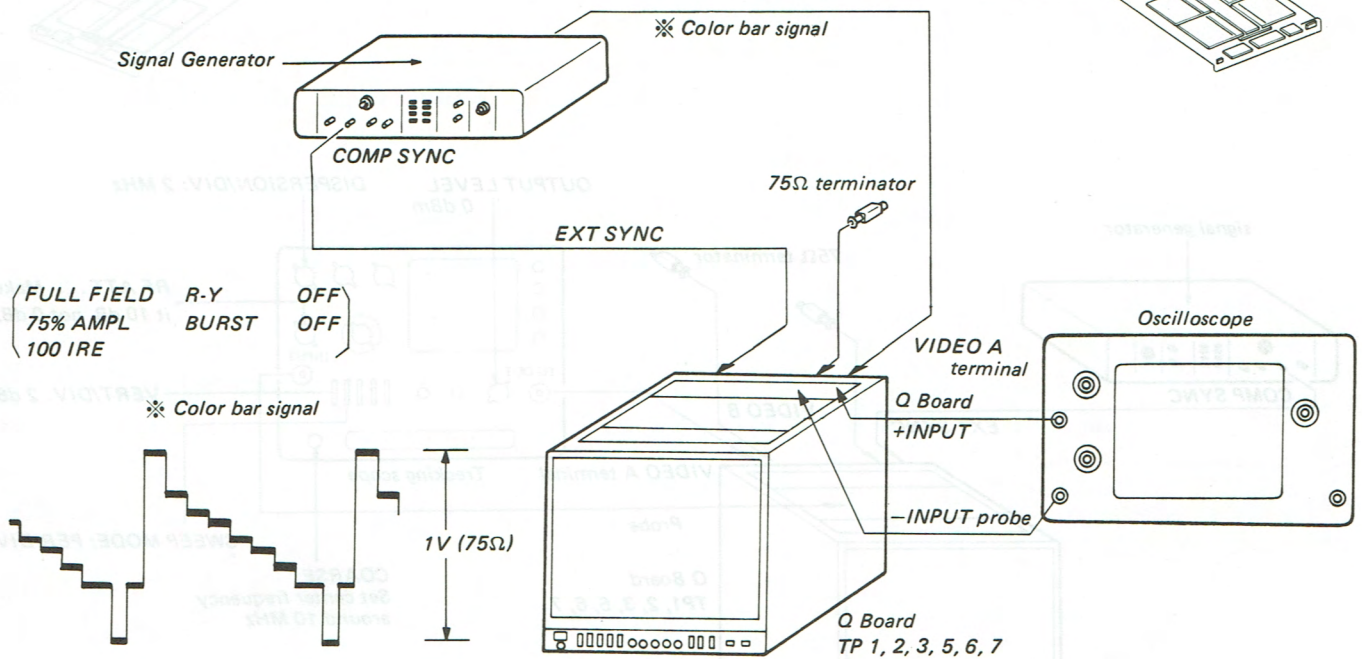


Fig. 3-1.

1. Connect as shown in Fig. 3-1.
2. Turn on the POWER SW of the set, and turn the INPUT SW to "A" and SYNC SW to "EXT".
3. Connect the oscilloscope probe to Q Board TP1, and by adjusting the oscilloscope vertical amplitude (VOLTS/DIV, VAR knobs), adjust the output waveform to full-scale. (Fig. 3-2)
4. Shift the color bar signal and 75Ω terminator from VIDEO A terminal to VIDEO B terminal.
5. Shift the oscilloscope probe to TP2, and by turning Q Board RV1, adjust the output waveform to the same graduation as the output waveform of TP1 was adjusted in step 3. (Make it the same level as the output waveform of TP1.)
6. Similarly, adjust the output levels of Q Board of R, G and B circuits as follows:

R circuit	TP5	RV3
G circuit	TP6	RV4
B circuit	TP7	RV5

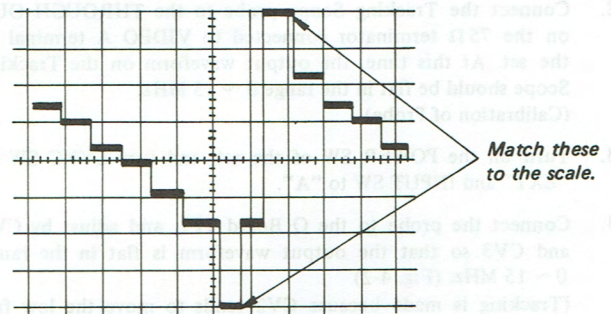
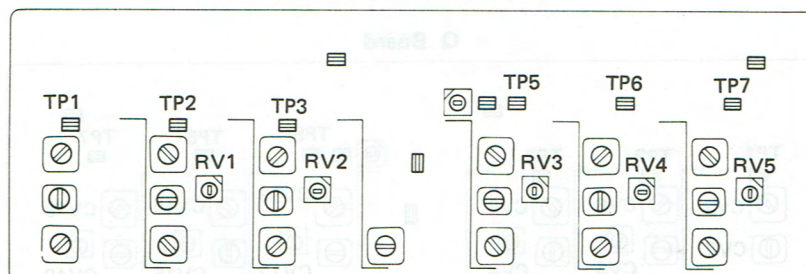


Fig. 3-2.

Q Board



4. Q Board Input Circuit Frequency Characteristics Adjustment

Frequency adjustment probe calibration See page 5-16

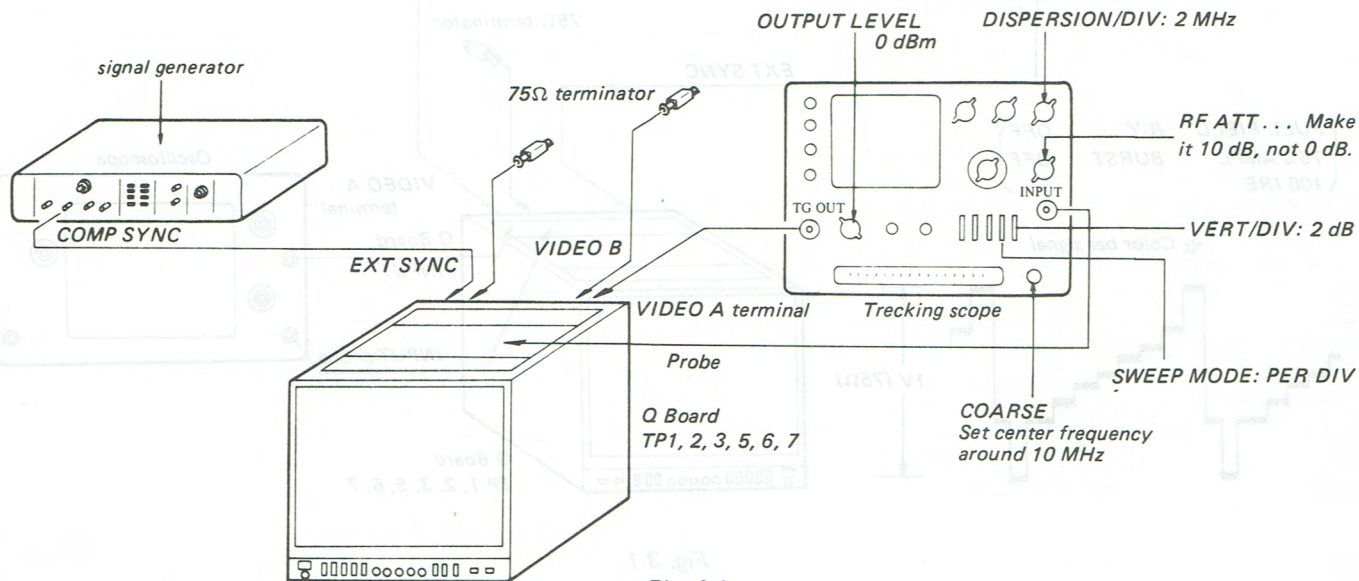
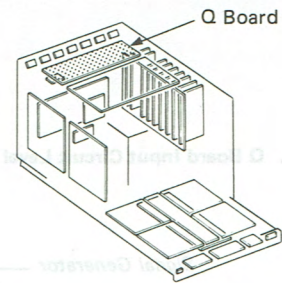
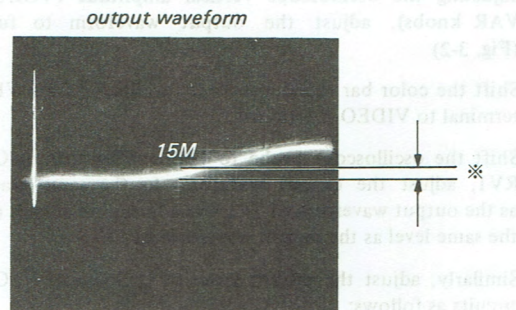


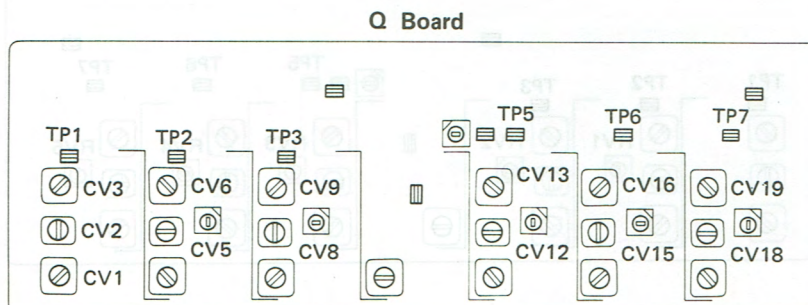
Fig. 4-1.

1. Connect as shown in Fig. 4-1.
2. Connect the Tracking Scope probe to the THROUGH OUT on the 75Ω terminator connected to VIDEO A terminal of the set. At this time, the output waveform on the Tracking Scope should be flat in the range 0 ~ 15 MHz. (Calibration of Probe)
3. Turn on the POWER SW of the set, and turn SYNC SW to "EXT" and INPUT SW to "A".
4. Connect the probe to the Q Board TP1, and adjust by CV2 and CV3 so that the output waveform is flat in the range 0 ~ 15 MHz. (Fig. 4-2)
(Tracking is made because CV2 tends to move the low frequency zone and CV3 high frequency zone.)
5. Connect TG OUT, 75Ω terminator to VIDEO B terminal, and turn INPUT SW to "B".
Connect the probe to TP2, and make a similar adjustment by CV5 and CV6, as in the case of VIDEO A circuit.
6. After that, adjust the circuits, TEST (TP3, CV8, CV9), R (TP5, CV12, CV13), G (TP6, CV15, CV16) and B (TP7, CV18, CV19) in the same manner. (Turn INPUT SW to "TEST" or "RGB".)



※ Within 0.5dB in the range 0 to 15MHz

Fig. 4-2.



5. BJ Board Adjustment

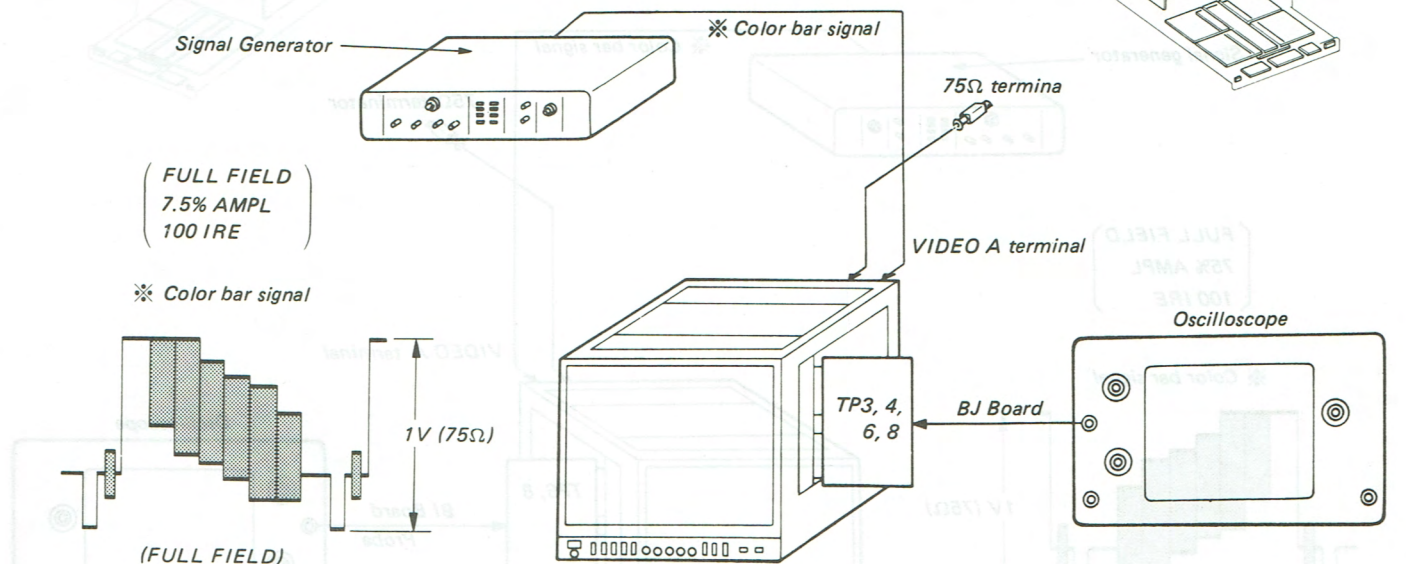


Fig. 5-1.

Adjustment of H SYNC PULSE WIDTH

1. Connect as shown in Fig. 5-1.
2. Turn on the POWER SW of the set, and turn the INPUT SW to "A" and SYNC SW to "INT".
3. Connect the probe of Oscilloscope to BJ Board TP3. (Connect the earth to TP6.)
4. Adjust the pulse width to $6\mu s$ by turning RV2. (Fig. 5-2)

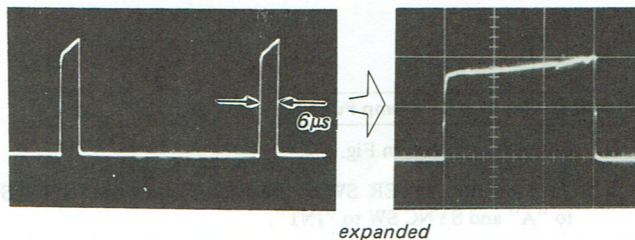


Fig. 5-2.

Adjustment of 1/2H Pulse Width

5. Connect the probe to BJ Board TP4. (Connect earth to TP6)
6. Set the oscilloscope trigger slope to \ominus .
7. As shown in Fig. 5-3, set the oscilloscope to DELAY MODE and adjust by turning RV3 so that the pulse rising parts overlap exactly.

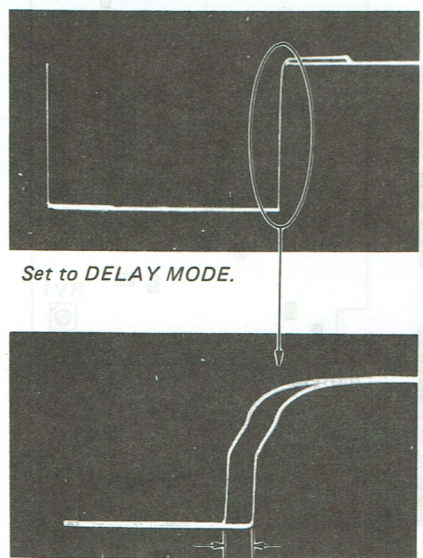
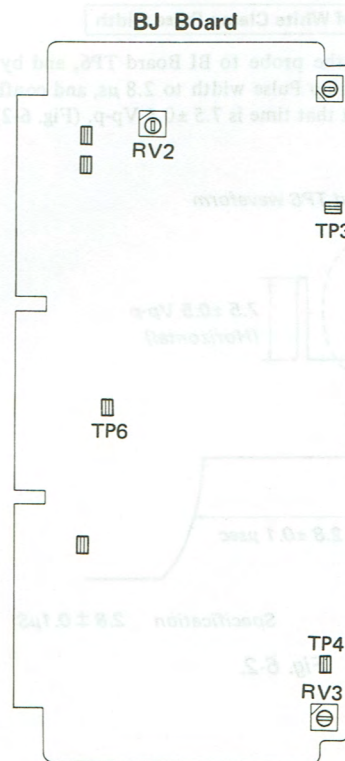


Fig. 5-3.



6. BI Board BRT and WHITE Pulse Adjustment

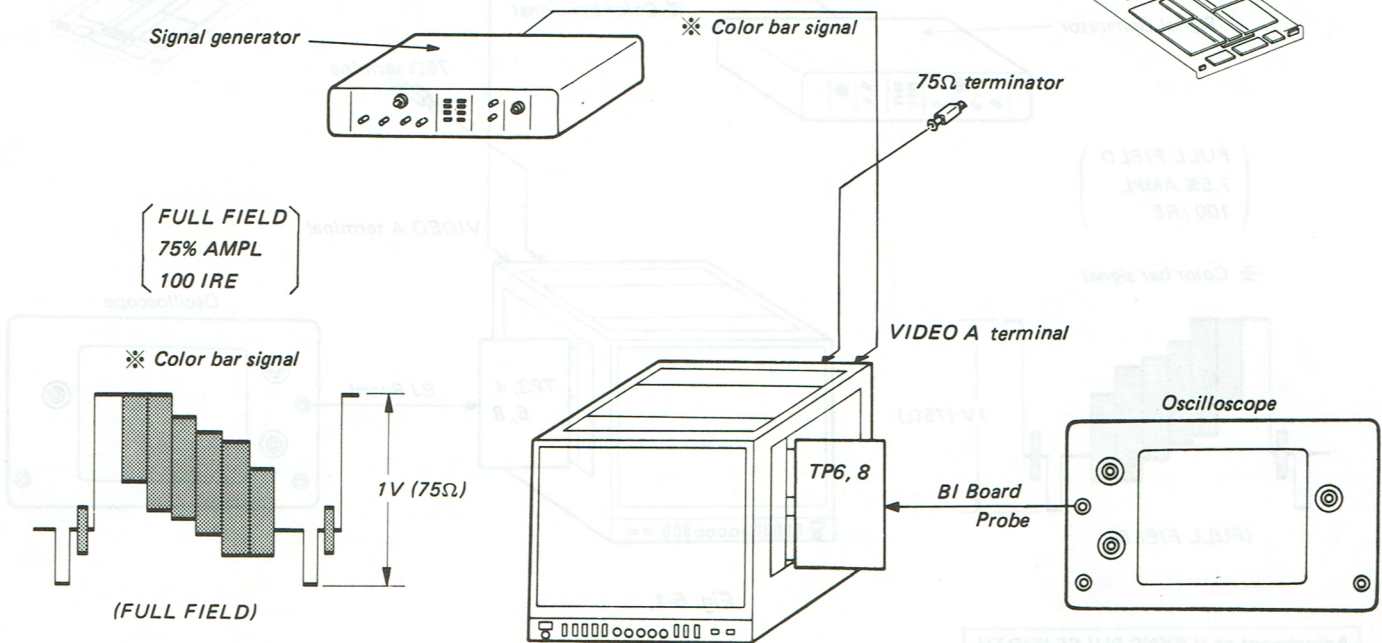


Fig. 6-1.

Adjustment of BRT Clamp Pulse

1. Connect as shown in Fig. 6-1.
2. Turn on the POWER SW of the set, and turn the INPUT SW to "A" and SYNC SW to "INT".
3. Connect the probe to BI board TP8, and by RV1 (Earth on TP18), adjust BRT Clamp Pulse width to $2.8 \mu\text{s}$, and confirm that the pulse voltage at that time is $7.5 \pm 0.5 \text{ V}_{\text{p-p}}$. (Fig. 6-2)

Adjustment of White Clamp Pulse width

4. Connect the probe to BI Board TP6, and by RV2, adjust the White Clamp Pulse width to $2.8 \mu\text{s}$, and confirm that the pulse voltage at that time is $7.5 \pm 0.5 \text{ V}_{\text{p-p}}$. (Fig. 6-2)

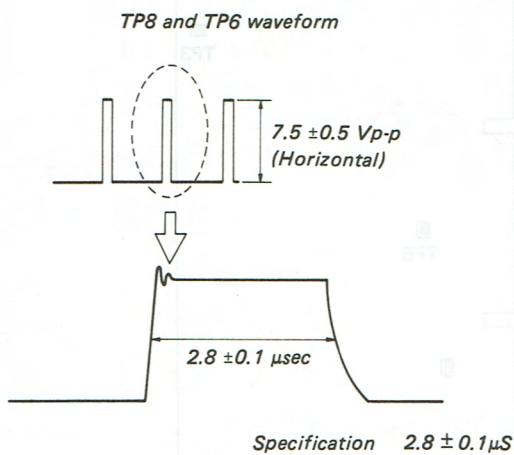
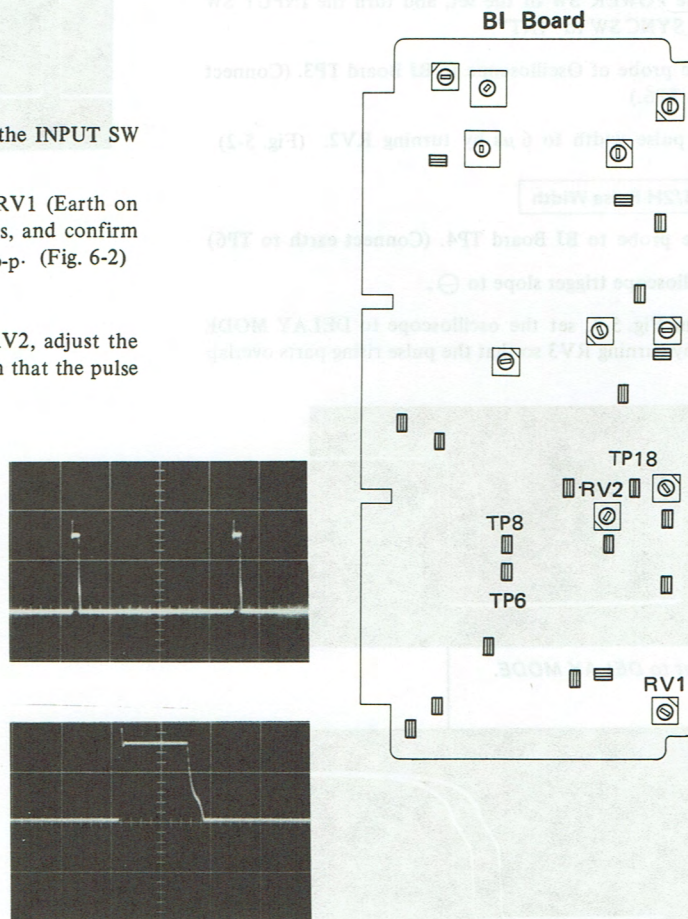


Fig. 6-2.



7. BI Board Color Difference Clamp Pulse Adjustment

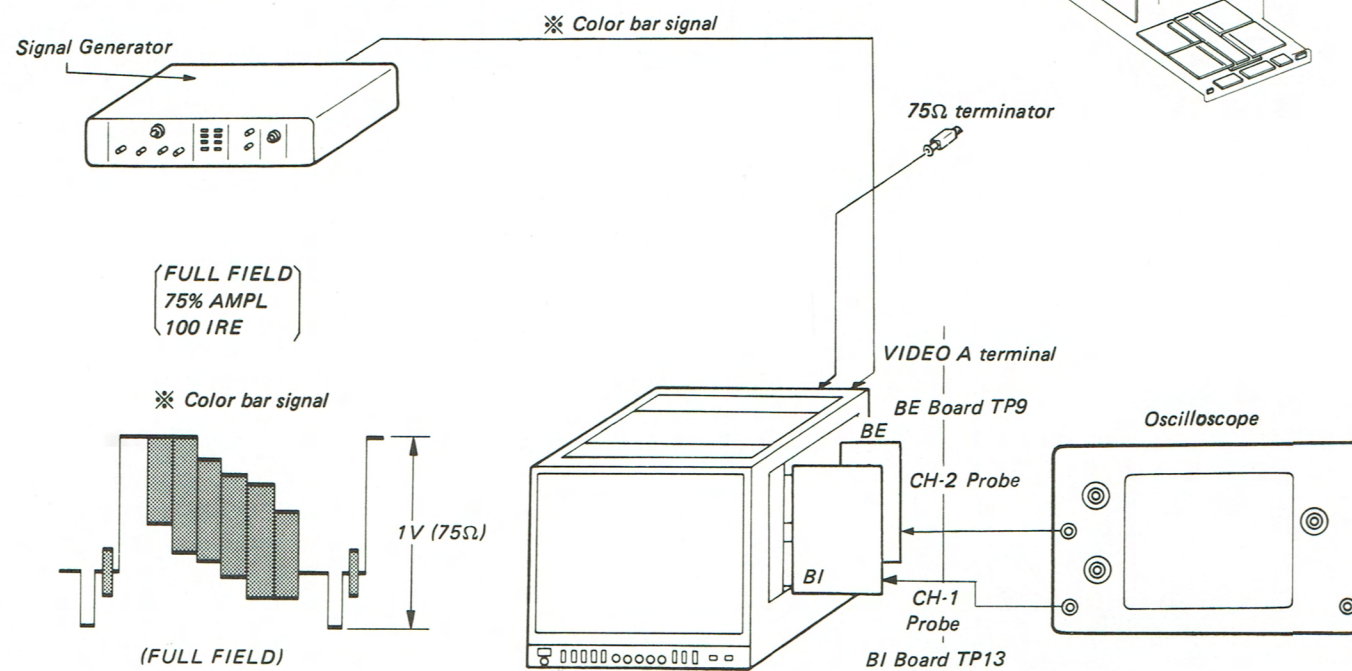
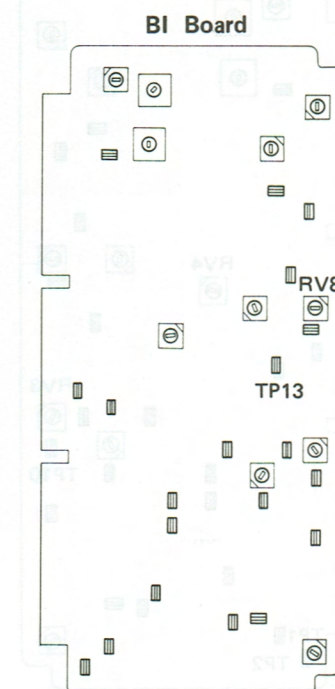
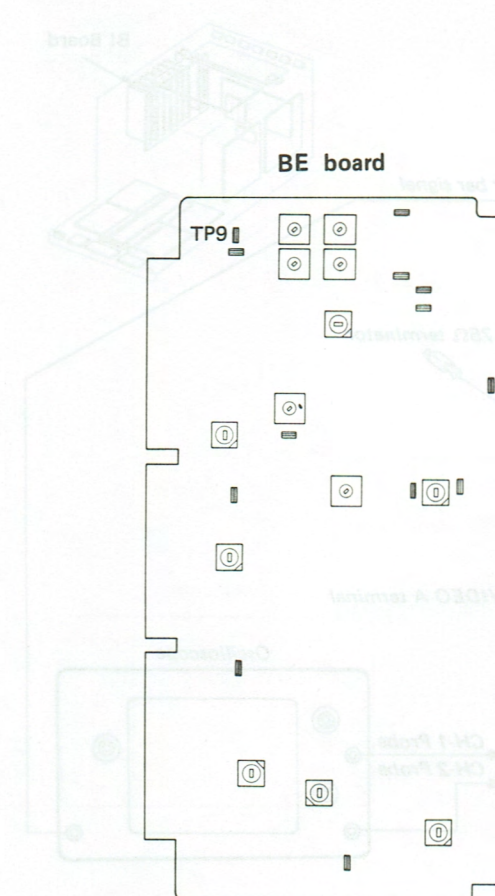
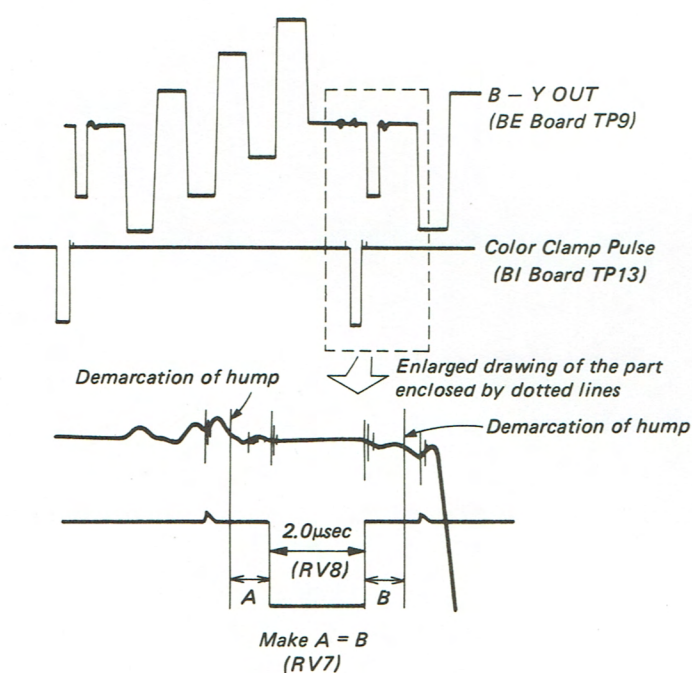


Fig. 7-1.

1. Connect as shown in Fig. 7-1.
2. Turn on the POWER SW of the set, turn the INPUT SW to "A" and SYNC SW to "INT", and MODE SW to "AUTO".
3. Connect CH2 of Oscilloscope to BE Board TP9 (B-Y OUT).
4. Connect CH1 of Oscilloscope to BI Board TP13.
5. While turning BI Board RV8 (PULSE WIDTH), set the clamp pulse width to $2.0 \mu\text{s}$, and adjust the phase by turning BI Board RV7 (PHASE).



8. BI Board Pulse Shape Adjustment

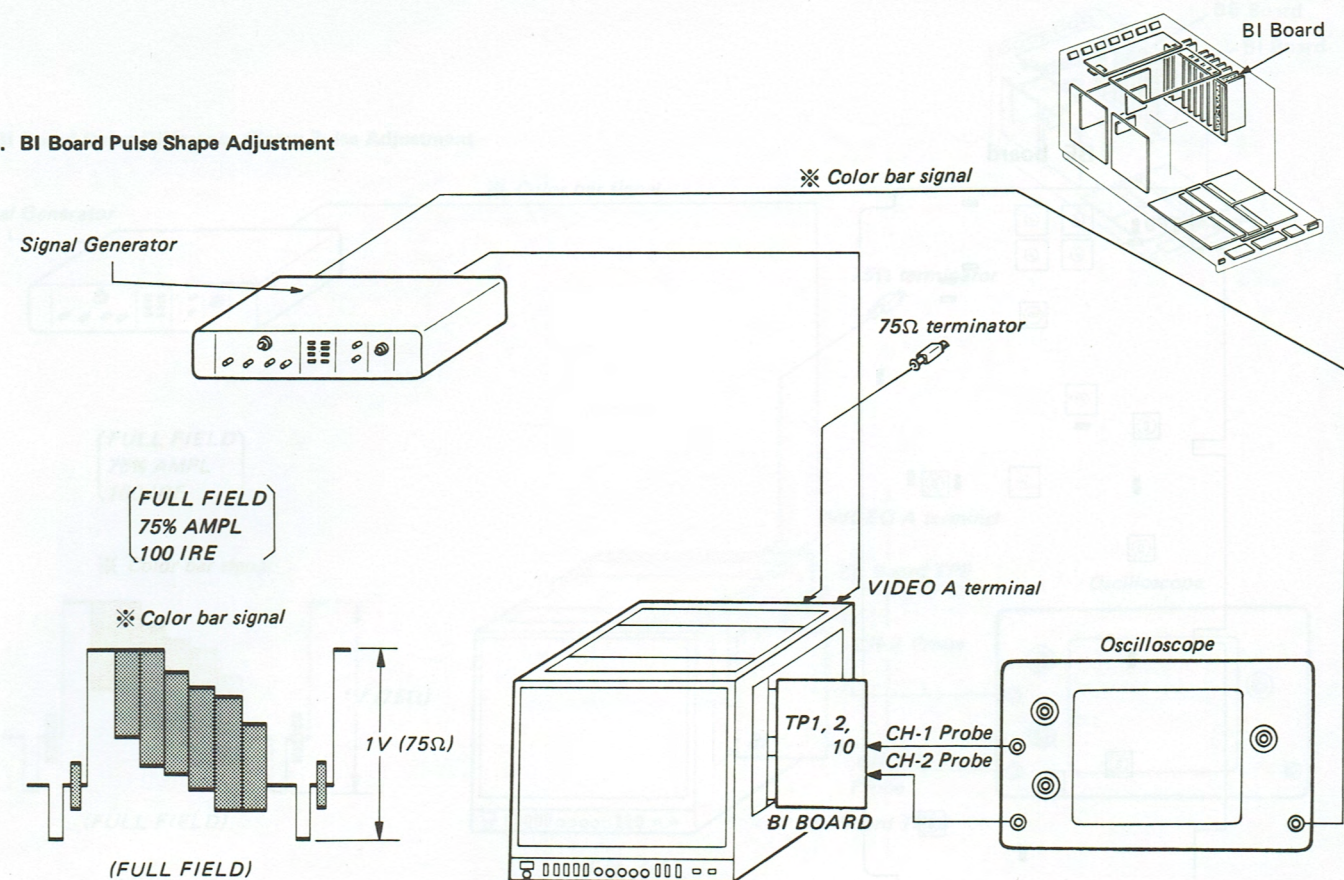


Fig. 8-1.

Adjustment of BIAS CLAMP PULSE

1. Connect as shown in Fig. 8-1.
2. Turn on the POWER SW of the set, and turn the INPUT SW to "A", the SYNC SW to "INT" and the MODE SW to "AUTO".
3. Connect CH1 probe of the oscilloscope to BI Board TP10 and CH2 to TP2. (The oscilloscope has H period.)
4. By turning RV4 (pulse width) and RV3 (phase) of BI Board, adjust the pulse form so that $A = B = 10 \mu s$ as shown in Fig. 8-2.
5. Connect the CH1 probe of Oscilloscope to BI Board TP1.
6. Confirm that the waveform timings of TP2 and TP1 are as shown in Fig. 8-2.

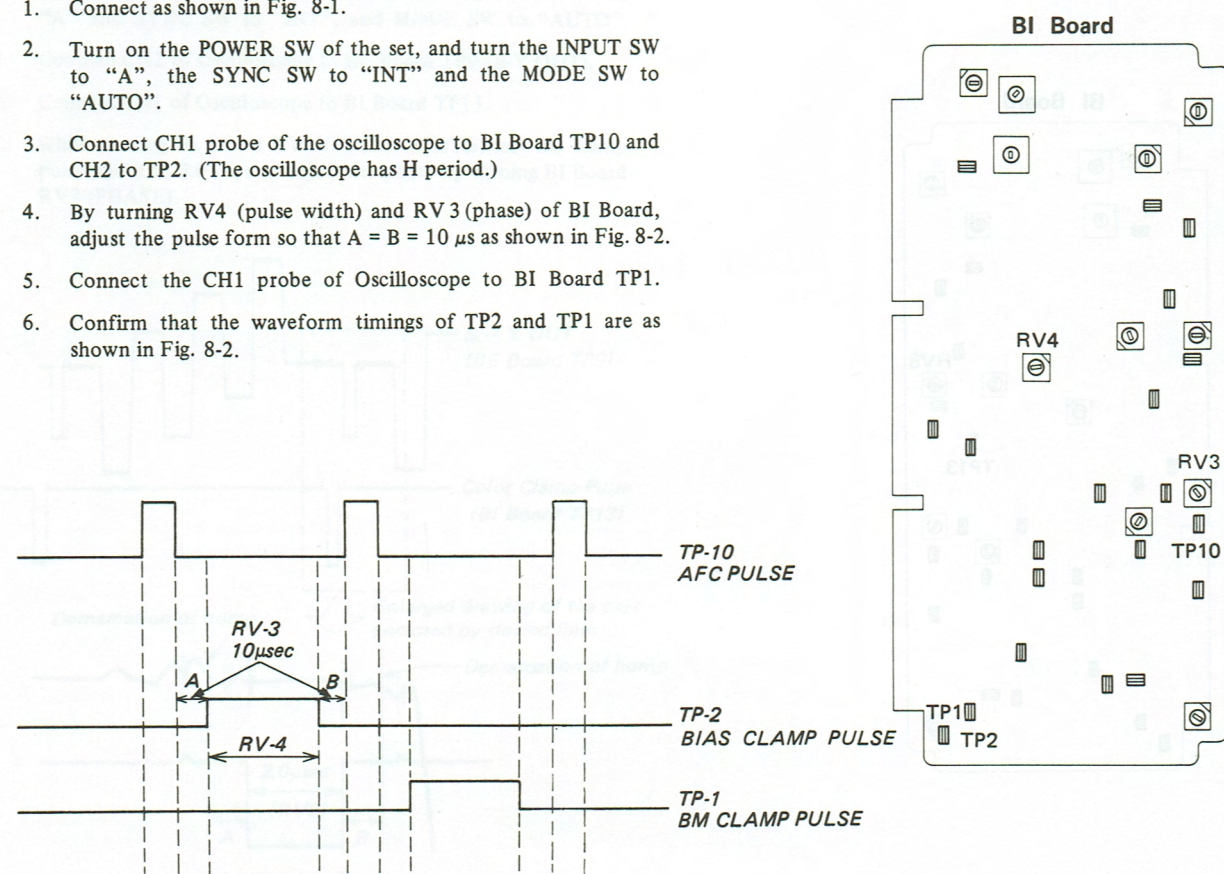


Fig. 8-2.

9. BI Board Cross-Hatch Adjustment

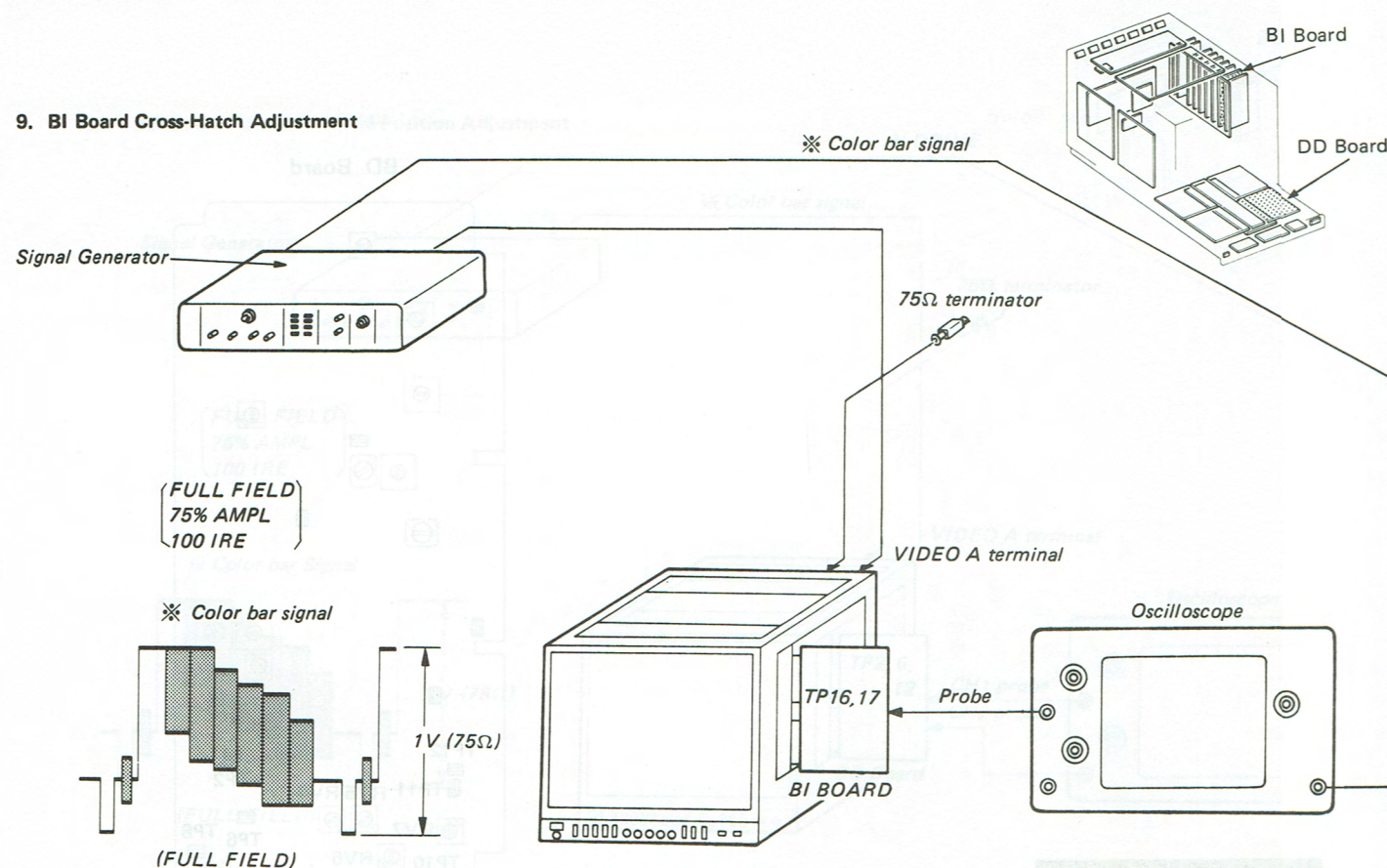


Fig. 9-1.

1. Connect as shown in Fig. 9-1.
2. Turn on the POWER SW of the set, turn the INPUT SW to "A" and SYNC SW to "INT", and MODE SW to "AUTO". Turn S10 (FUNCTION) and S11 of DD Board to the CROSS-HATCH position.
3. Connect the oscilloscope probe to BI Board TP17.

Adjustment of H Hatch Filter

4. As shown in Fig. 9-2, adjust by turning BI Board L2 so that the undershoot of pulse is flat.

Adjustment of H Hatch Pulse Width

5. By turning BI Board RV11, adjust the pulse width to 180 nsec half-way up the pulse height.

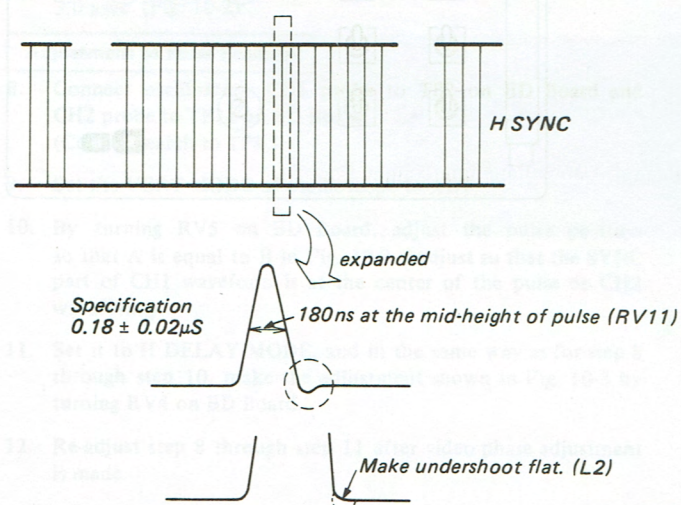
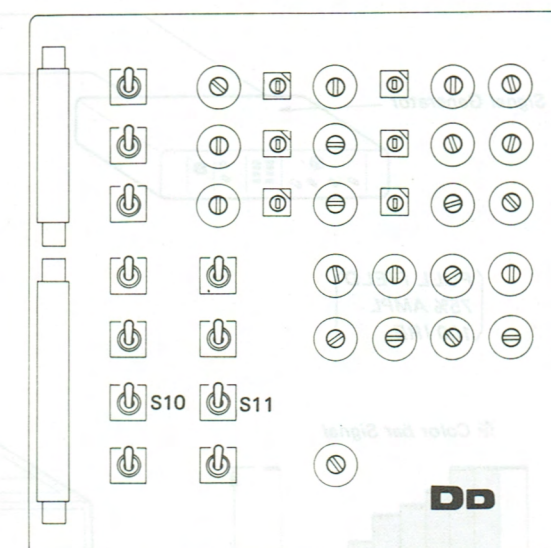
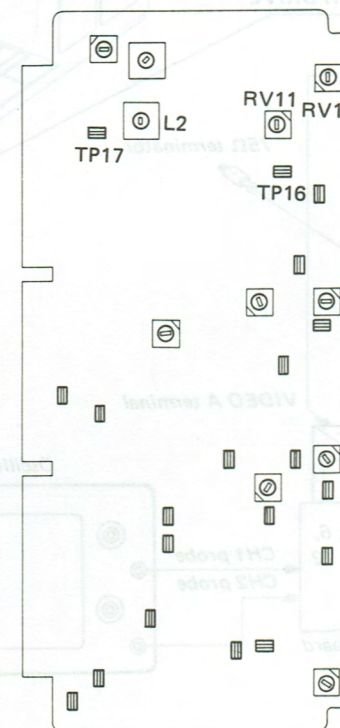


Fig. 9-2.

BI Board

DD Board



Adjustment of H Hatch BLK Pulse Width

6. Connect oscilloscope probe to BI Board TP16.
7. By turning BI Board RV10, adjust the pulse width to $8.0 \mu\text{sec}$ as shown in Fig. 9-3.
8. Return S10 (FUNCTION) and S11 of DD Board to normal.

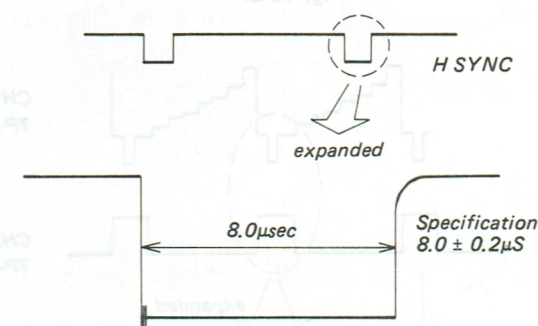
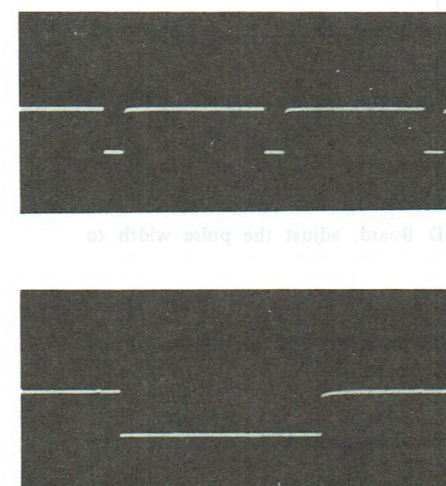


Fig. 9-3



10. BD Board Pulse Width and Position Adjustment

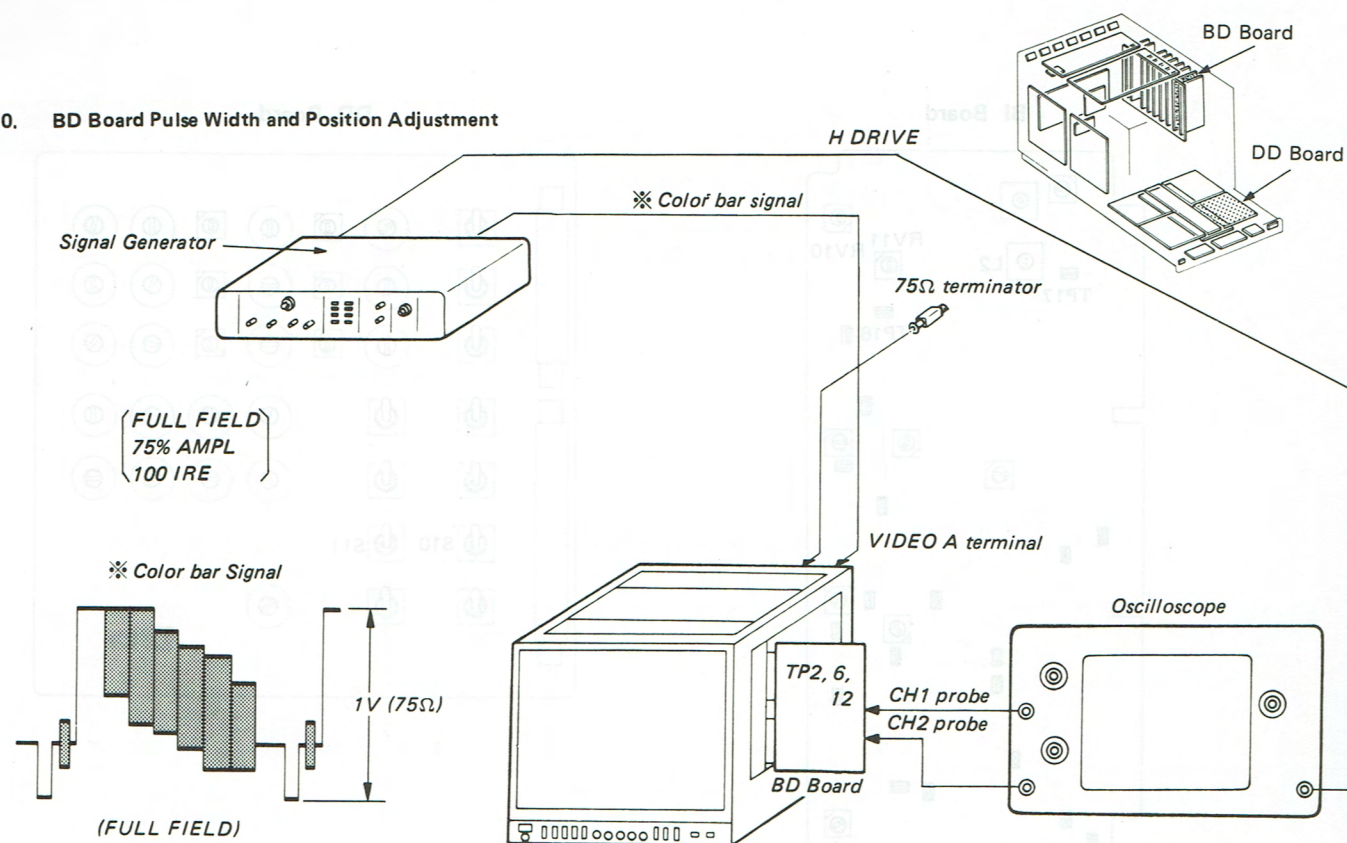


Fig. 10-1.

1. Connect as shown in Fig. 10-1.
2. Turn on the POWER switch of the set, turn the INPUT switch to "A", MODE switch to "AUTO" and APERTURE CONTROL to preset position.
3. Set S7 (APERTURE) to the 4.5 MHz position.

Adjustment of Pulse Width

4. Connect the oscilloscope probe to TP12 on BD Board. (Connect earth to TP10.)
5. By turning RV7 on BD Board, adjust the pulse width to 3.5 μ sec. (Fig. 10-2)
6. Connect the oscilloscope probe to TP6 on BD Board. (Connect earth to TP8.)
7. By turning RV6 on BD Board, adjust the pulse width to 3.0 μ sec. (Fig. 10-2)

Adjustment of Pulse Position

8. Connect oscilloscope CH1 probe to TP2 on BD Board and CH2 probe to TP11 on DD Board. (Connect earth to TP8.)
9. Set the VERT MODE of oscilloscope to ALT.
10. By turning RV5 on BD Board, adjust the pulse position so that A is equal to B in Fig. 10-3. (Adjust so that the SYNC part of CH1 waveform is at the center of the pulse on CH2 waveform.)
11. Set it to H DELAY MODE, and in the same way as for step 8 through step 10, make the adjustment shown in Fig. 10-3 by turning RV4 on BD Board.
12. Re-adjust step 8 through step 11 after video phase adjustment is made.

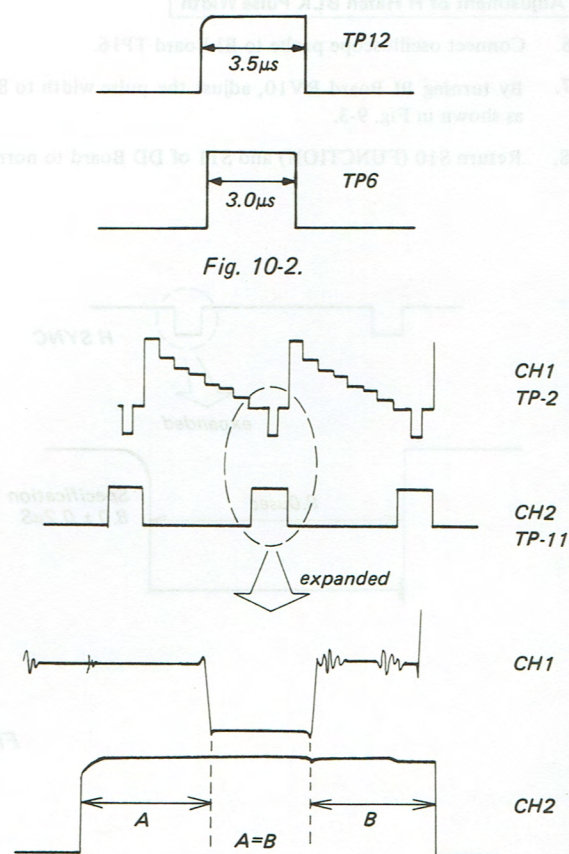
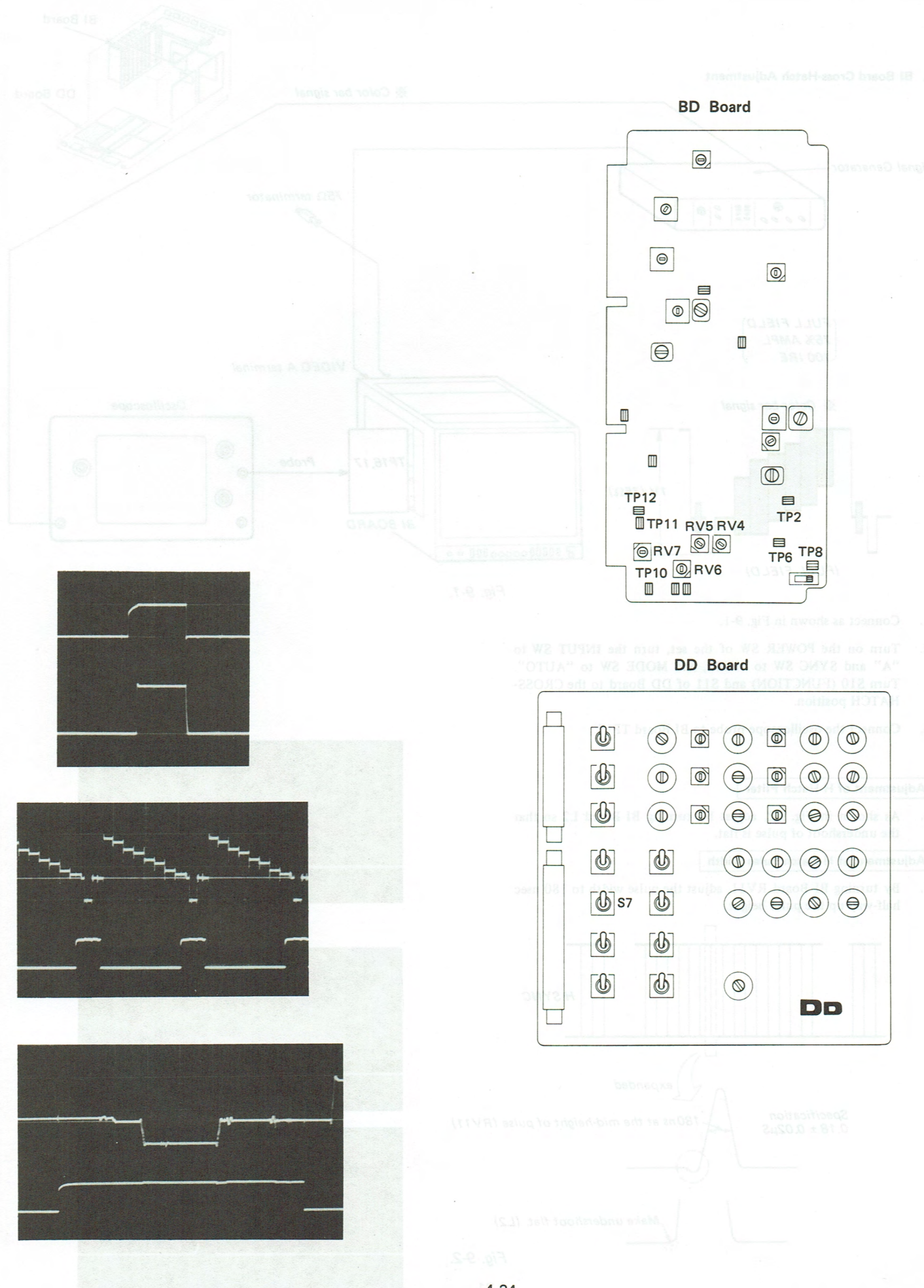


Fig. 10-3.



11. BD Board Trap Adjustment

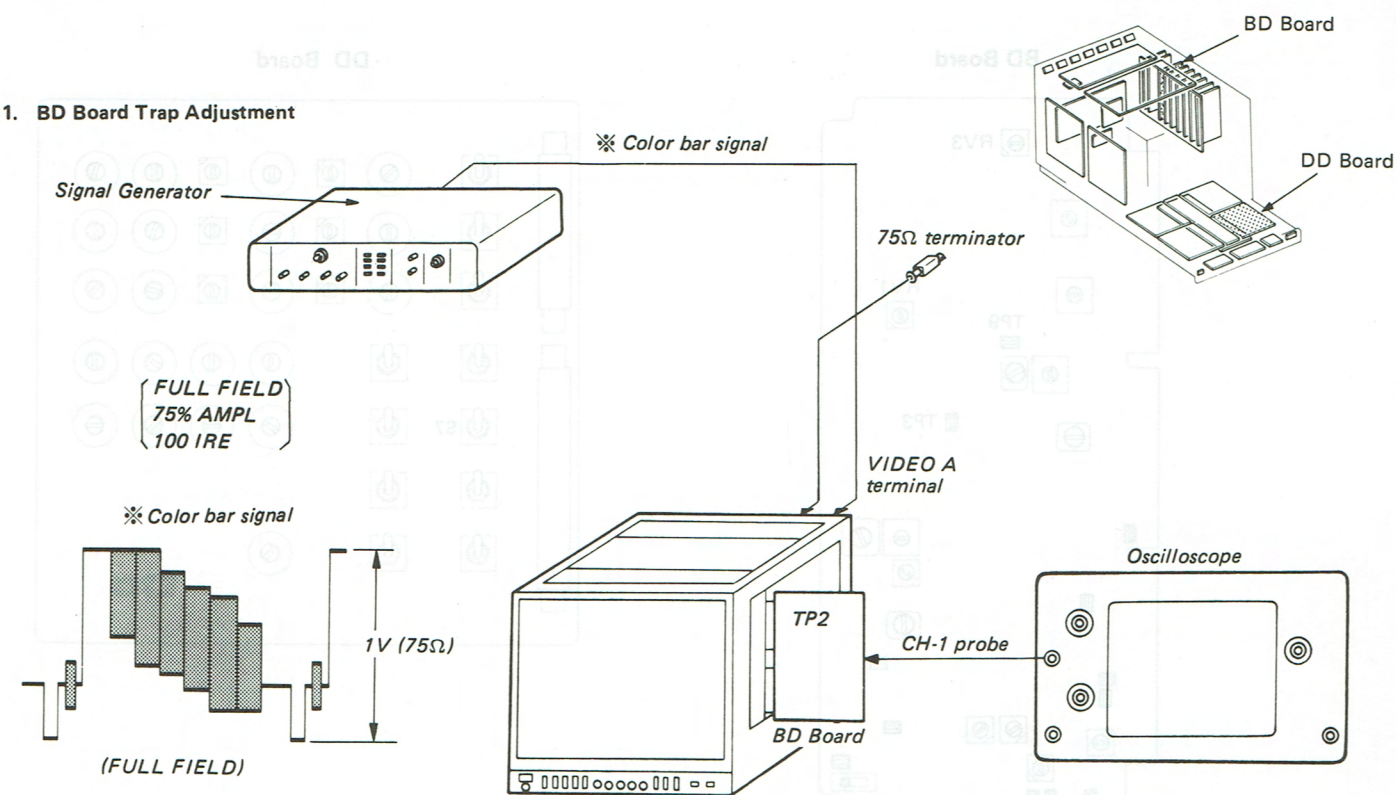


Fig. 11-1.

1. Adjust as shown in Fig. 11-1.
2. Turn on the POWER switch of the set, and turn the INPUT switch to "A" and MODE switch to "AUTO".
3. Set S7 (APERTURE) on DD board to the 4.5 MHz position.
4. Set the APERTURE CONTROL on Front Panel to MAX.
5. Connect the Oscilloscope probe to TP2 on BD Board. (Connect earth to TP-8.)
6. Turn L4 on BD Board so that the 4.43 MHz (PAL) or 3.58 MHz (PAL-M) component of the waveform on the oscilloscope is a minimum. (Fig. 11-2)

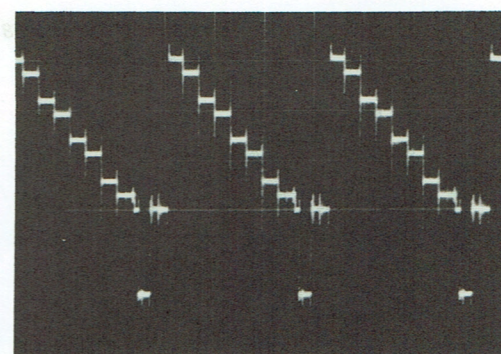
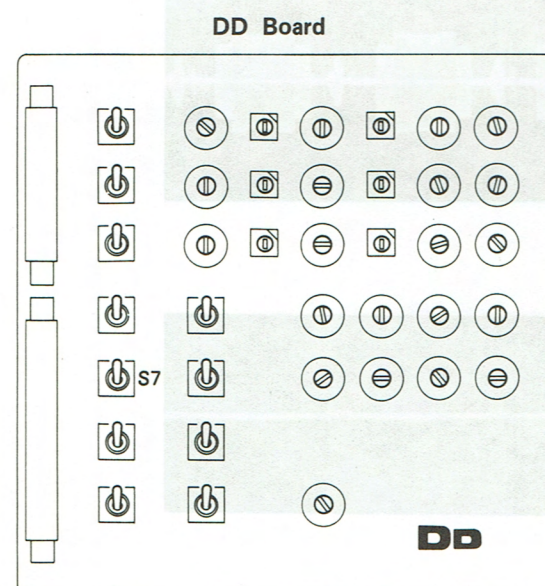
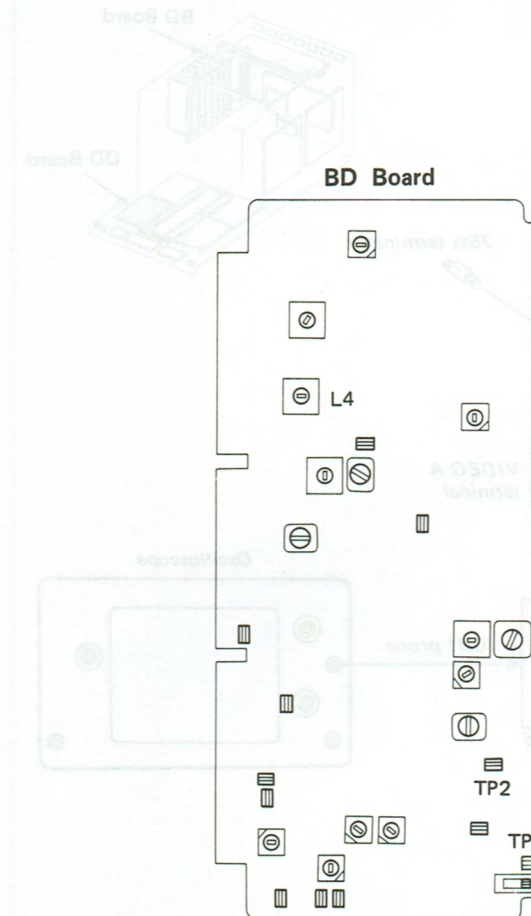


Fig. 11-2.



12. BD Board Aperture Adjustment

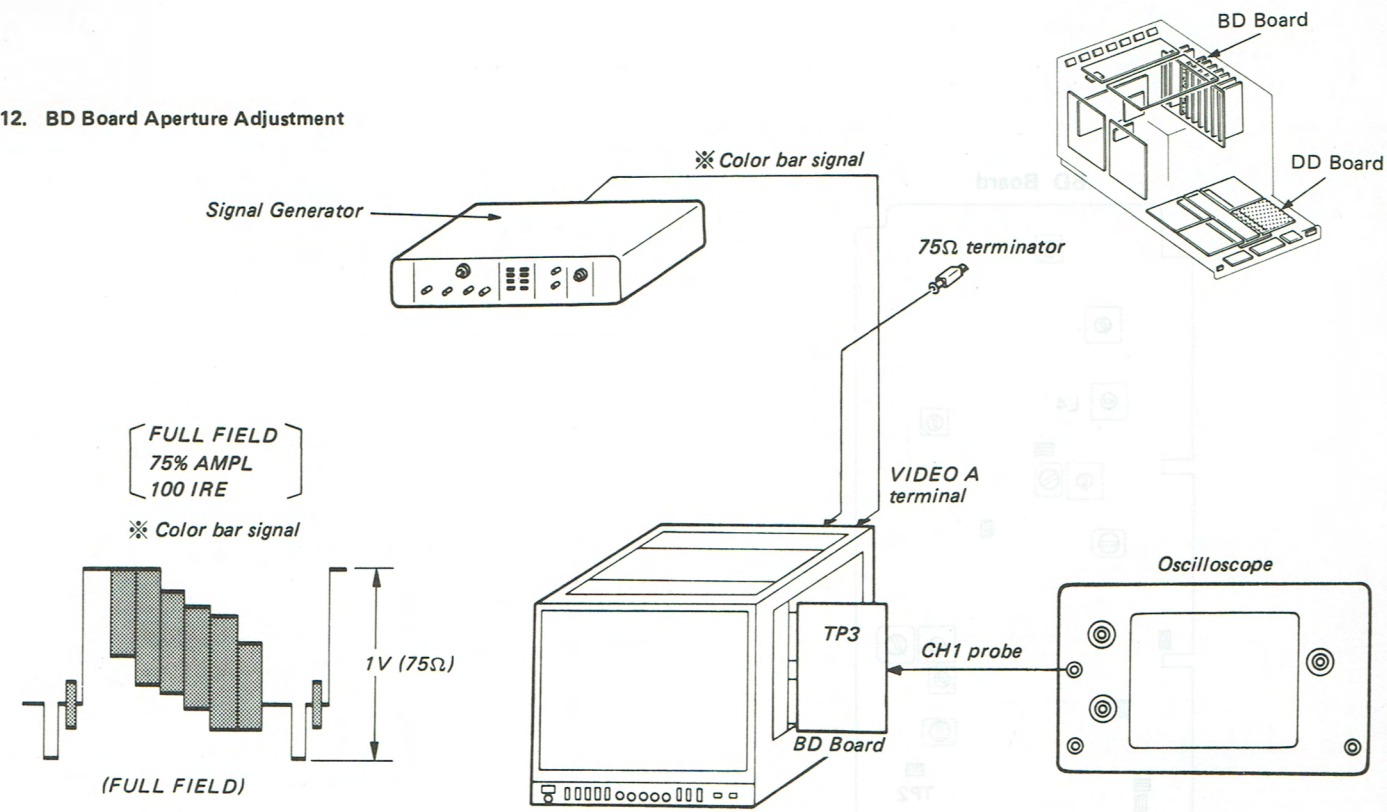


Fig. 12-1.

1. Connect as shown in Fig. 12-1.

Adjustment of Aperture MAX

- Turn on the POWER switch of the set, turn the INPUT switch to "A" and MODE switch to "AUTO".
- Set S7 (APERTURE) on DD board to the 4.5 MHz position.
- Connect the oscilloscope probe to TP3 on BD Board. (Connect earth to TP-9.)
- Set the APERTURE CONTROL on Front Panel to MAX.
- Turn RV1 on BD Board so that the waveform on oscilloscope is linear. (Fig. 12-2)

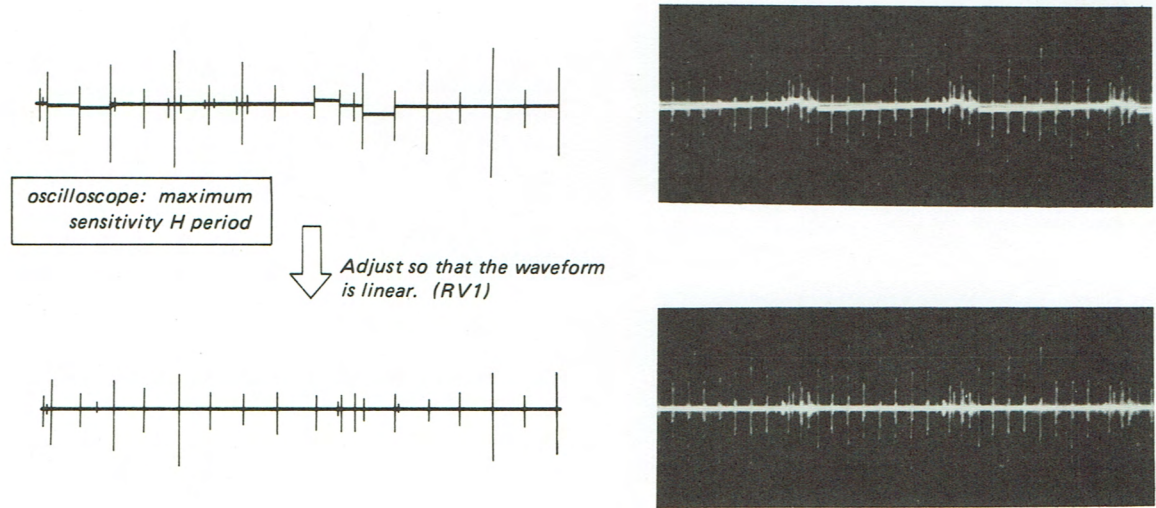
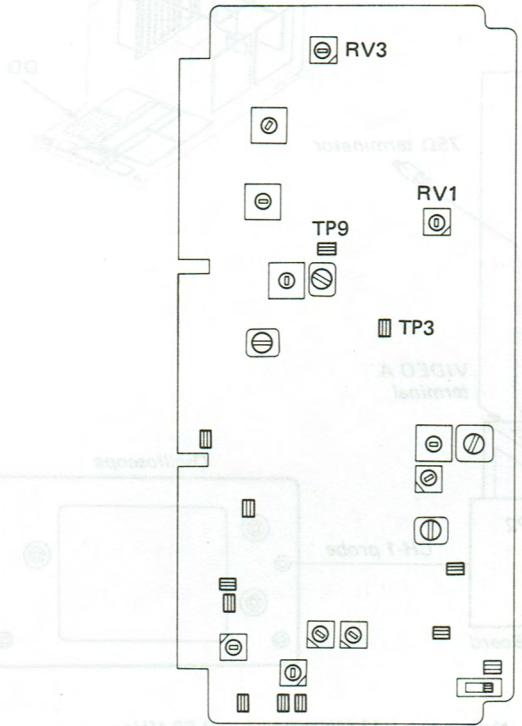
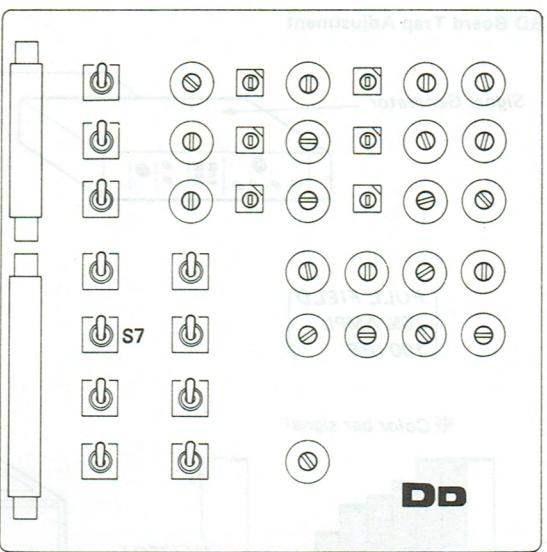


Fig. 12-2.

BD Board



DD Board



Aperture Preset Adjustment

- Set the APERTURE CONTROL on Front Panel to the preset position and the MODE switch to B/W.
- Turn RV3 on BD Board so that the 4.43 MHz (PAL) or 3.58 MHz (PAL-M) component of the waveform on Oscilloscope is a minimum.

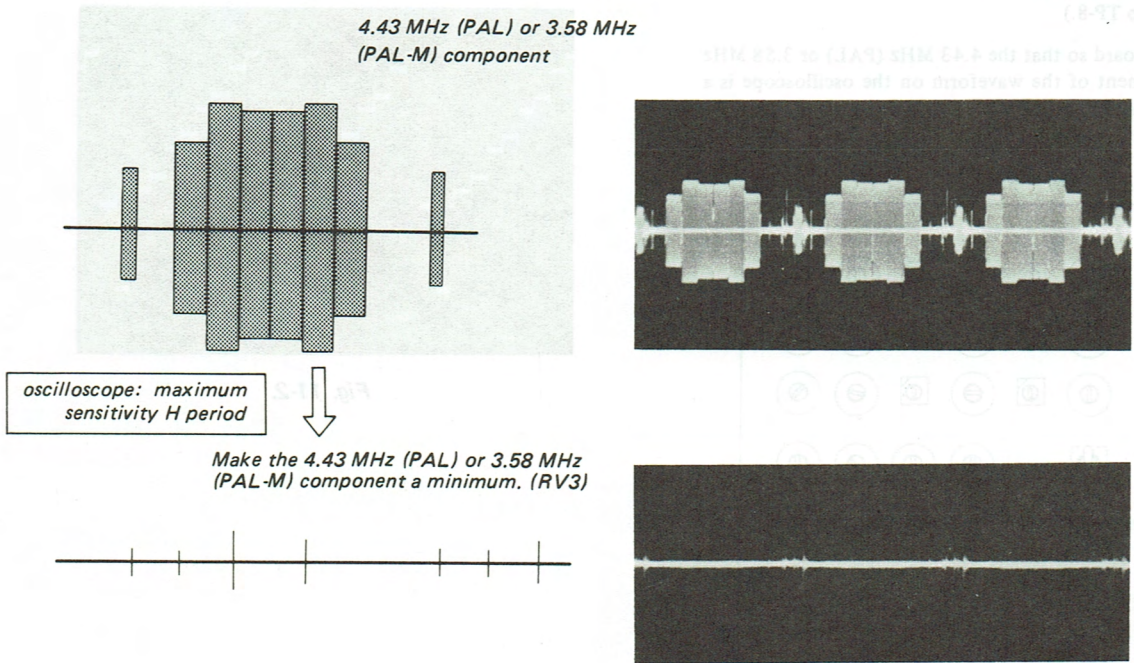


Fig. 12-3.

14. BD Board Y System Frequency Characteristic Adjustment
Frequency Characteristic Adjustment Probe Calibration
..... See page 4-20

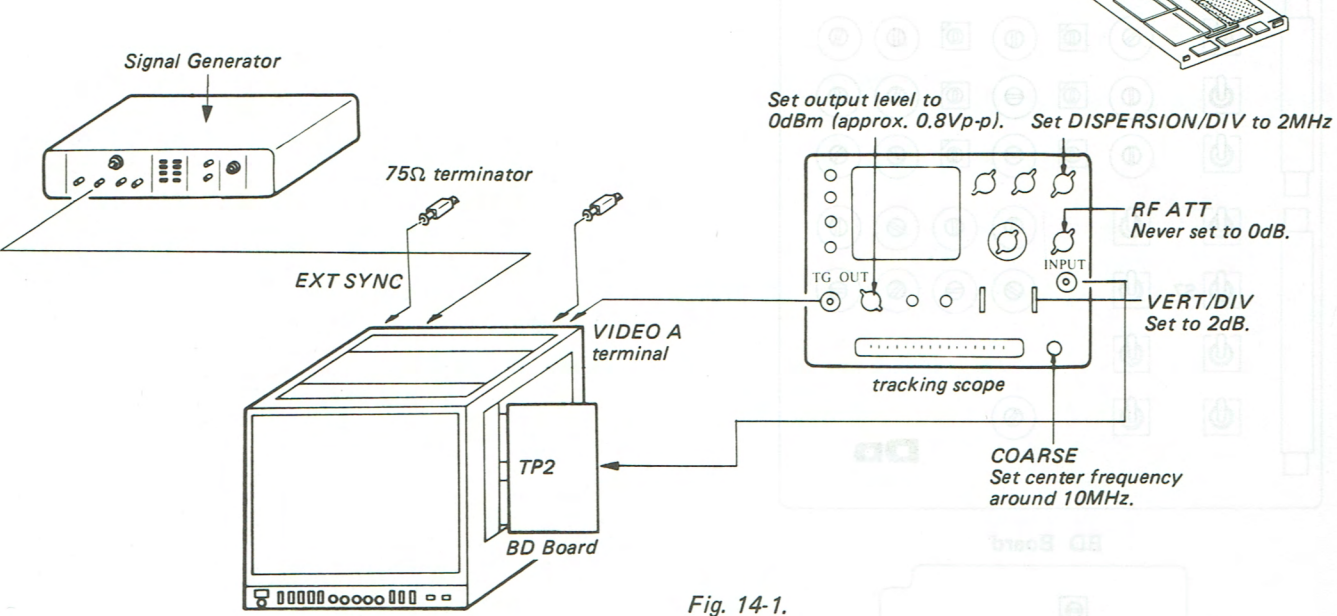


Fig. 14-1.

1. Connect as shown in Fig. 14-1.
2. Switch on the set. Set INPUT switch to A, SYNC switch to EXT and MODE switch to B/W. Set S1 (B), S2 (G) and S3 (R) on DD board to OFF.
3. Connect the tracking scope probe to TP2 of BD Board. (GROUND: TP8)
4. Turn L9 and CV4 on BD Board, and minimize the hump on the TR scope waveform to extended the F characteristics to a maximum.
5. Turn CV3 on BD Board and flatten the F characteristics. Refer to Fig. 14-2.
6. Repeat steps 4 ~ 5 for maximally flat F characteristics in the range 0-12 MHz.

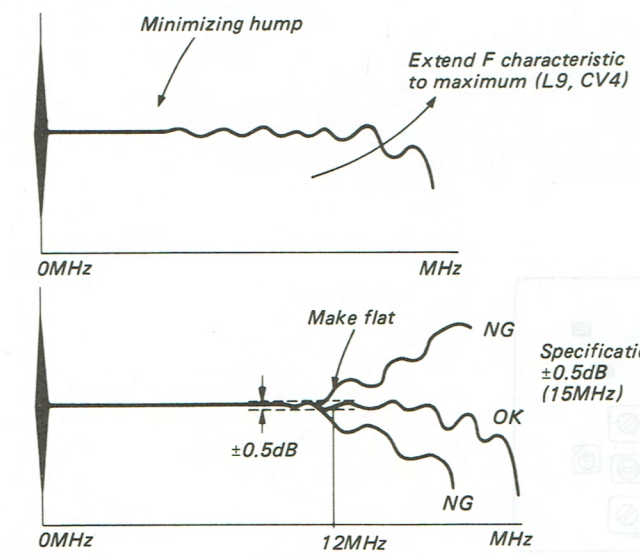


Fig. 14-2.

Adjustment of CRT FLAT

7. Set S7 (APERTURE) on the DD Board to 9 MHz, S6 to PRESET and CRT FLAT MODE
8. Adjust RV26 (ADJUST) on DD Board for 4 dB at 8 MHz as shown in Fig. 14-3.
9. Set S6 on DD Board to MANUAL and S7 (APERTURE) to 4.5 MHz.
10. Set S1(B), S2(G) and S3(R) on DD board to switch ON.

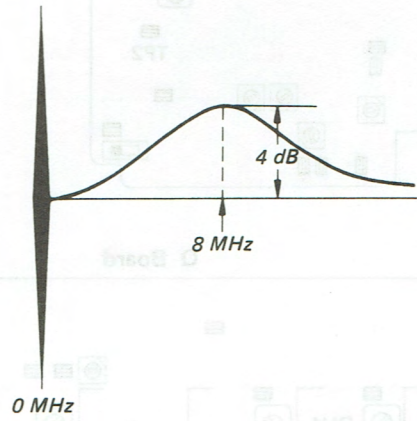
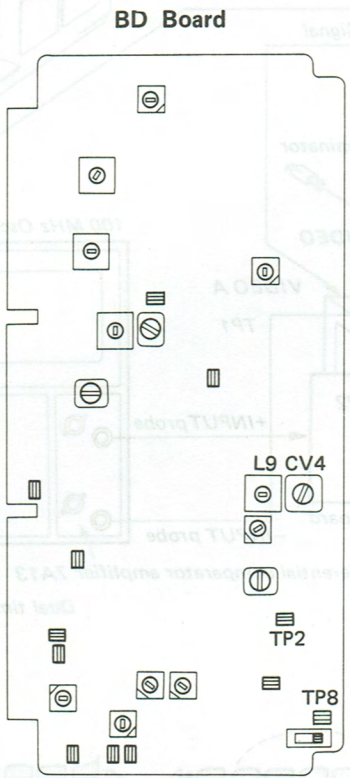
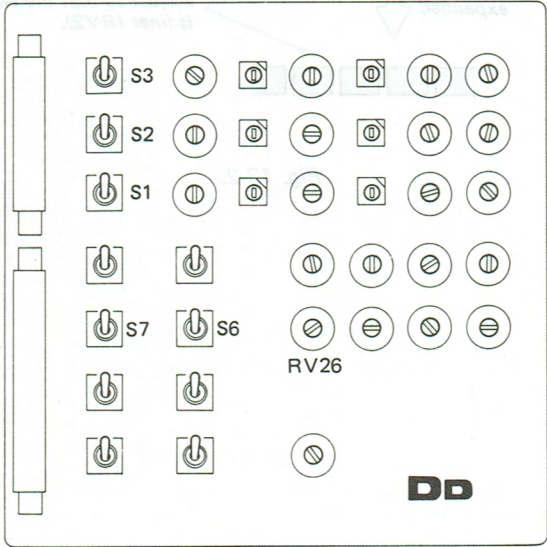


Fig. 14-3.



DD Board



15. BD Board 2T Pulse Collection Adjustment

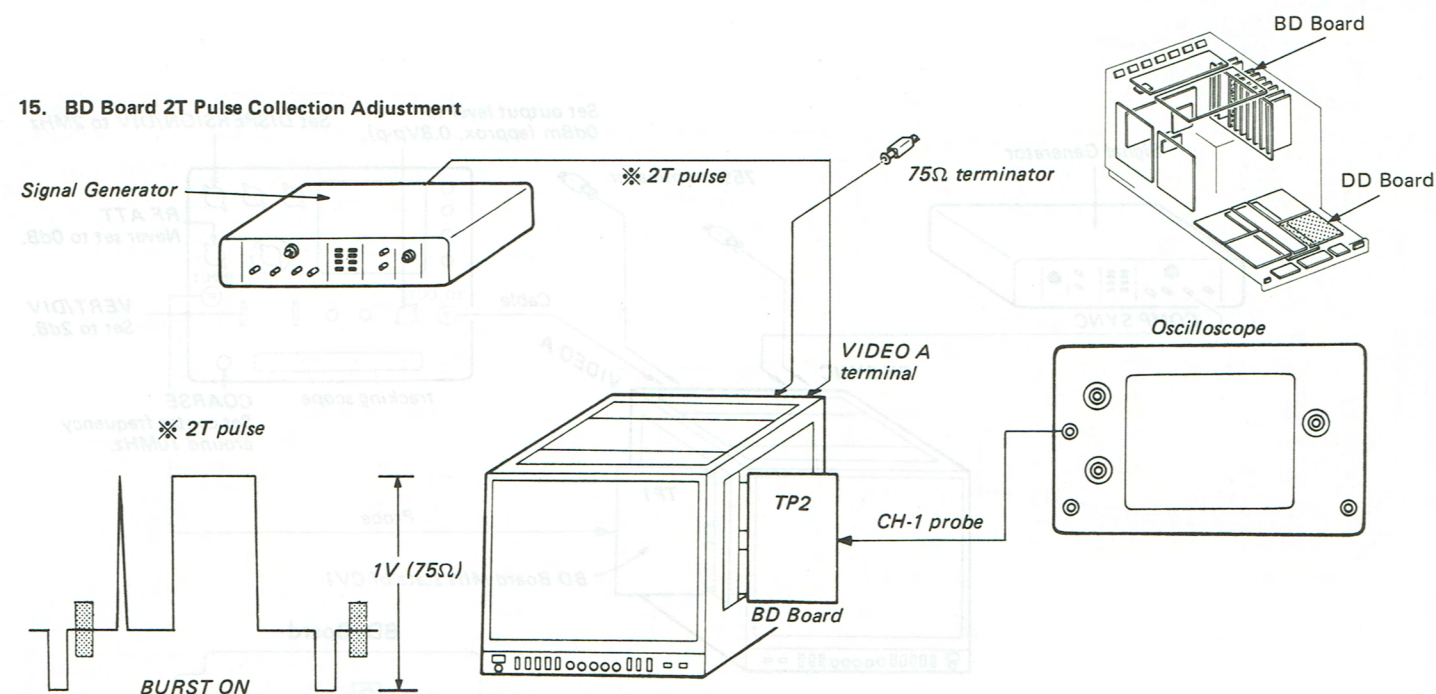


Fig. 15-1.

1. Complete the connections as shown in Fig. 15-1.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
3. Set S7 (APERTURE) on DD Board to 4.5 MHz position.
4. Connect the oscilloscope probe to TP2 on the BD Board.
5. Adjust L5 on the B Board so that A is equal to B as shown in Fig. 15-2.
6. Change the input signal from 2T pulse to T pulse, and make sure the waveform balance is not lost extremely. (See Fig. 15-2.)

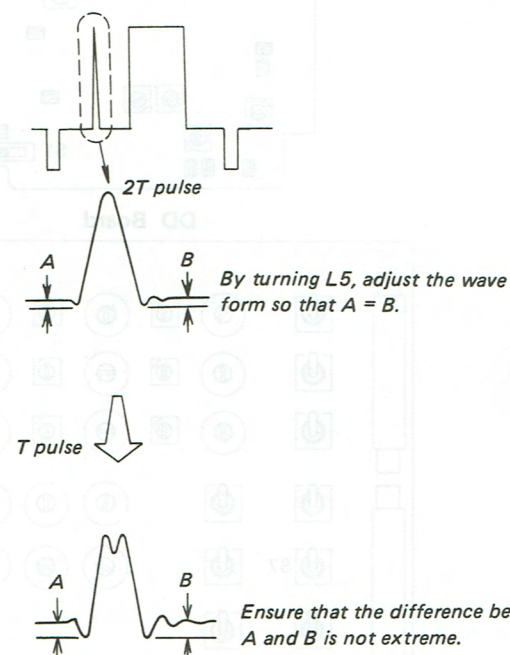
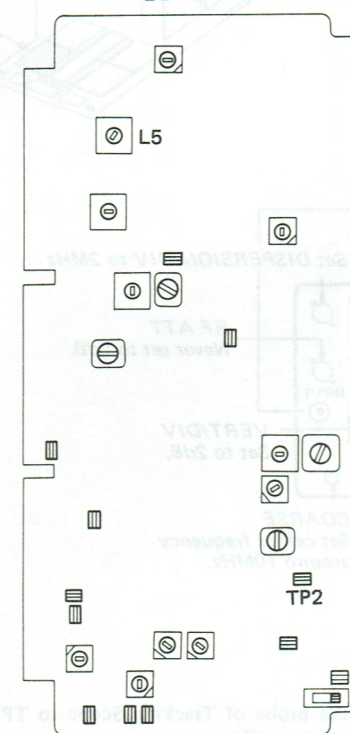
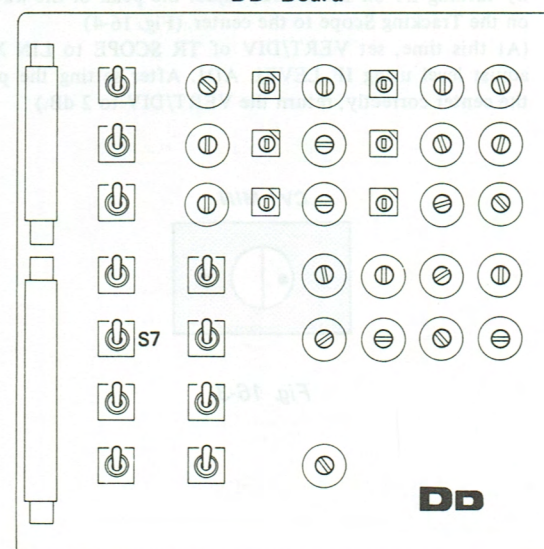


Fig. 15-2.

BD Board



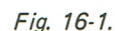
DD Board



Knob name	Setting range
RF ATT	10 dB
REF LEVEL	-40 dB
TRIGGER	AUTO
SWEEP MODE	PER DIV
SCAN MODE	INT
VERT DIV	1 dB
TC OUT LEVEL	0 dB
DISPERSION DIV	0.2 MHz
VIDEO FILTER	OFF
BAND WIDTH	100 kHz

1. Connect as shown in Fig. 15-1.
2. Turn the POWER switch of the set to the INPUT switch to "A", the SYNC switch to "EXT" and MODE switch to COLOR.
3. Connect as shown in Fig. 15-1.
4. Turn the Coarse Knob on Tracking Scope so that the center of the picture on Tracking Scope is at 4.43 MHz (PAL) or 3.58 MHz (NTSC).
5. Set S7 (APERTURE) on DD board to the 4.5 MHz position and S8 (SET UP) to ON position.

Frequency characteristic Adjustment Probe Calibration See page 4-20



- Table 16-1.

Knob name	Setting range
RF ATT	10 dB
REF/LEVEL	-40 dB
TRIGER	AUTO
SWEEP MODE	PER DIV
SCAN MODE	INT
VERT DIV	2 dB
TG OUT LEVEL	0 dB
DISPERSION/DIV	0.5 MHz
VIDEO FILTER	OFF
BAND WIDTH	100 kHz

- CV1 MIN

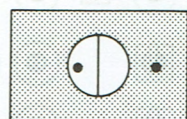
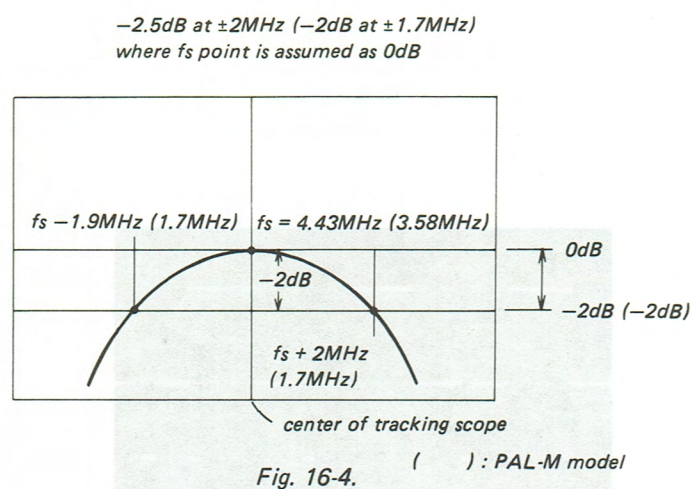
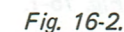


Fig. 16-3.

2. Connect as shown in Fig. 16-1.
3. Turn the Coarse Knob on Tracking Scope so that the center of the picture on Tracking Scope is at 4.43 MHz (PAL) or 3.58 MHz (PAL-M).
4. Connect as shown in Fig. 16-2.
5. Turn on the POWER switch of the set, turn the INPUT switch to "A", the SYNC switch to "EXT" and MODE switch to COLOR.
6. Set S7 (APERTURE) on DD board to the 4.5 MHz position, and S8 (SET UP) to ON position.

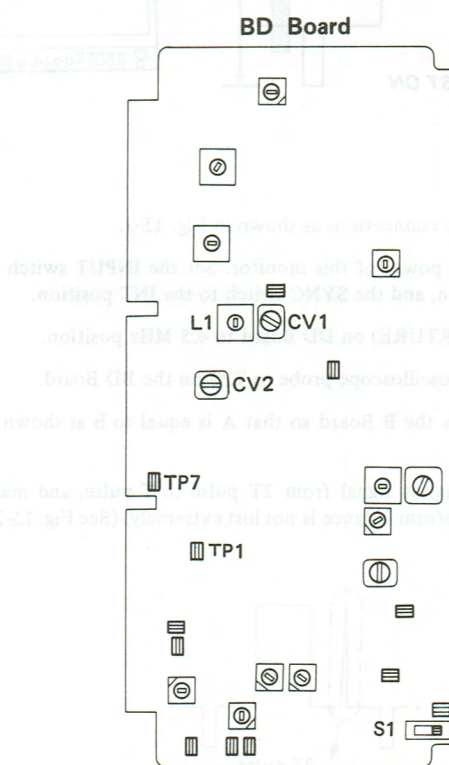


11. Adjust so that the characteristics is -2 dB at fs (4.43 MHz) ± 1.9 MHz (PAL) or -2 dB at fs (3.58 MHz) ± 1.7 MHz (PAL-M) by turning CV1 on BD Board. (Fig. 16-4)

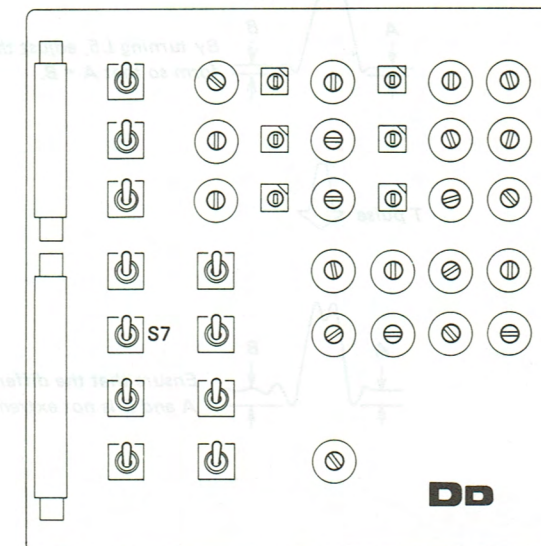
When the said adjustment cannot be achieved by turning CV1 on BD Board, adjust tracking by turning CV1 and L1 on P Board. Make this adjustment, while watching that the peak of the waveform is at the center of Tracking Scope by setting the VERT/DIV on Tracking Scope to LIN X5 as in step 10.

MIN Adjustment of Color Gain Control

12. Set the VERT/DIV on Tracking Scope to 10 dB.
13. Set the CHROMA CONTROL on Front Panel of the Set to MIN (the position where there is no click).
14. By turning CV2 on BD Board, adjust so that the level of the waveform on Tracking Scope at fs (4.43 MHz or 3.58 MHz) is a minimum.



DD Board



17. BD Board Chroma Preset Adjustment

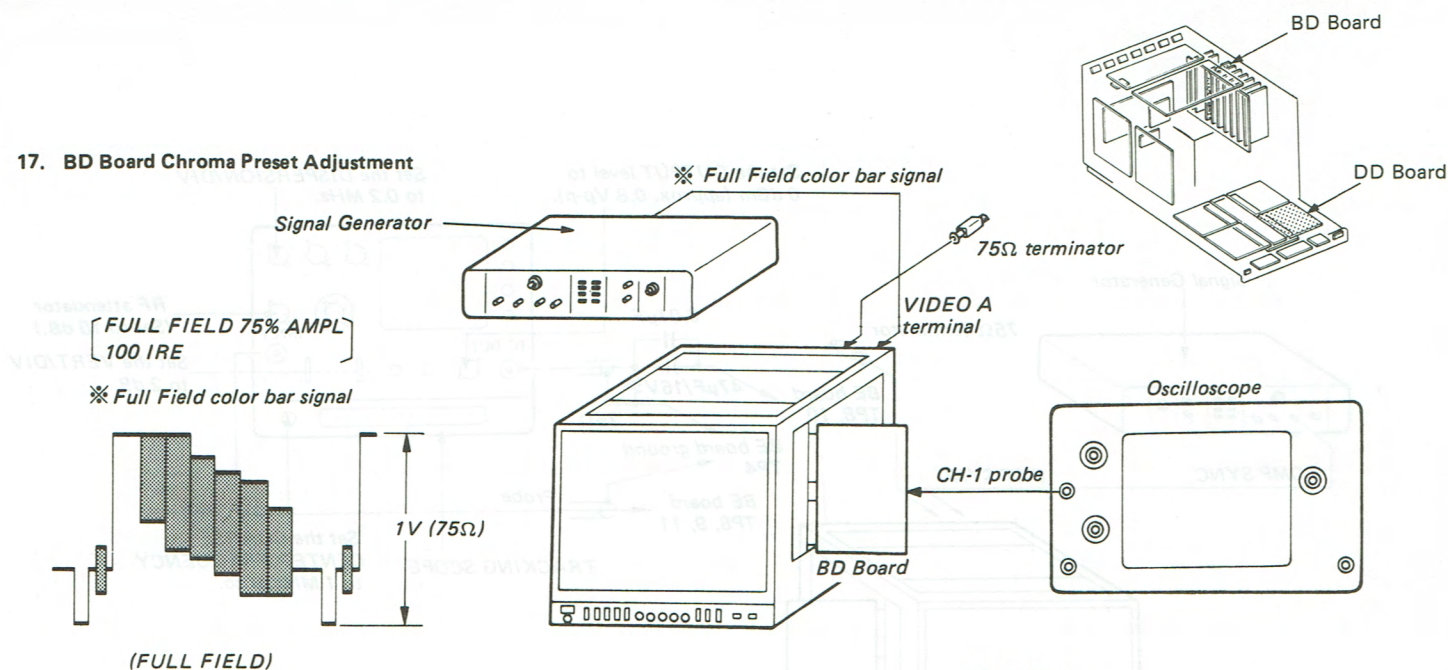


Fig. 17-1.

1. Connect as shown in Fig. 17-1.
2. Turn on the POWER switch, and turn the INPUT switch to "A", the SYNC switch to "INT" and the MODE switch to "COLOR", and preset CHROMA CONTROL.
3. Set S7 (APERTURE) on DD Board the 4.5 MHz position.
4. Connect the oscilloscope probe to TP1 on BD Board. (Connect the earth to TP7.)
5. By turning RV4 on H Board, adjust the waveform on oscilloscope to 150 mV_{p-p} as shown in Fig. 17-2.

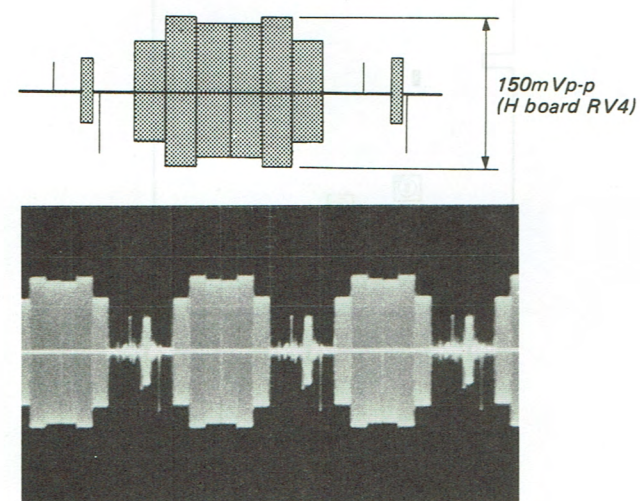
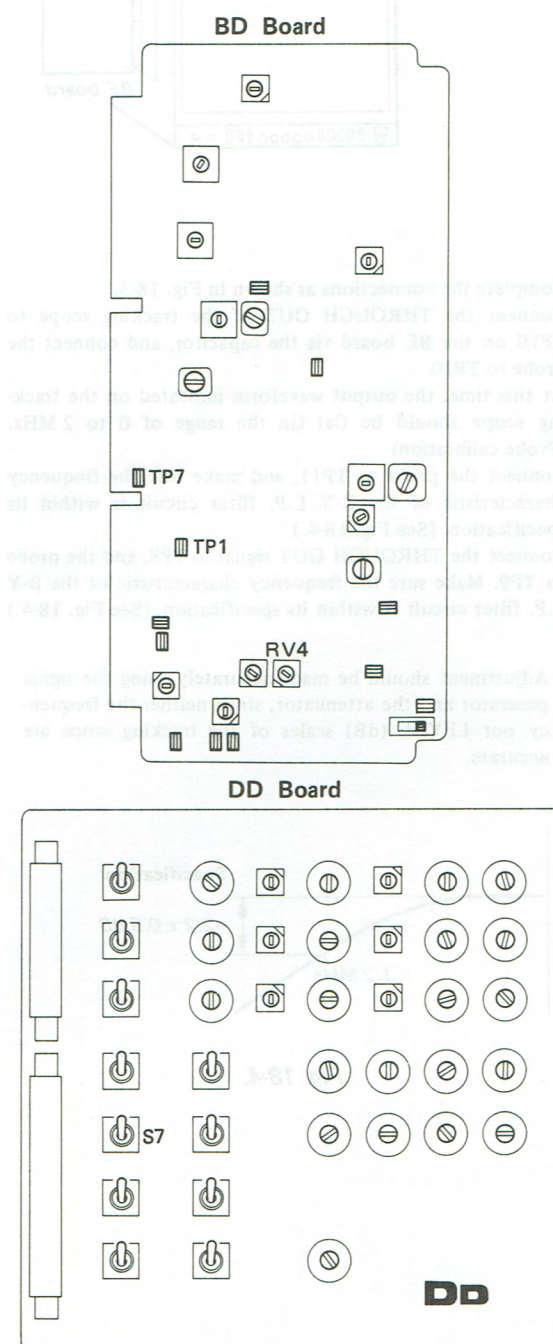


Fig. 17-2.



18. BE Board Color Difference L.P. Filter Adjustment

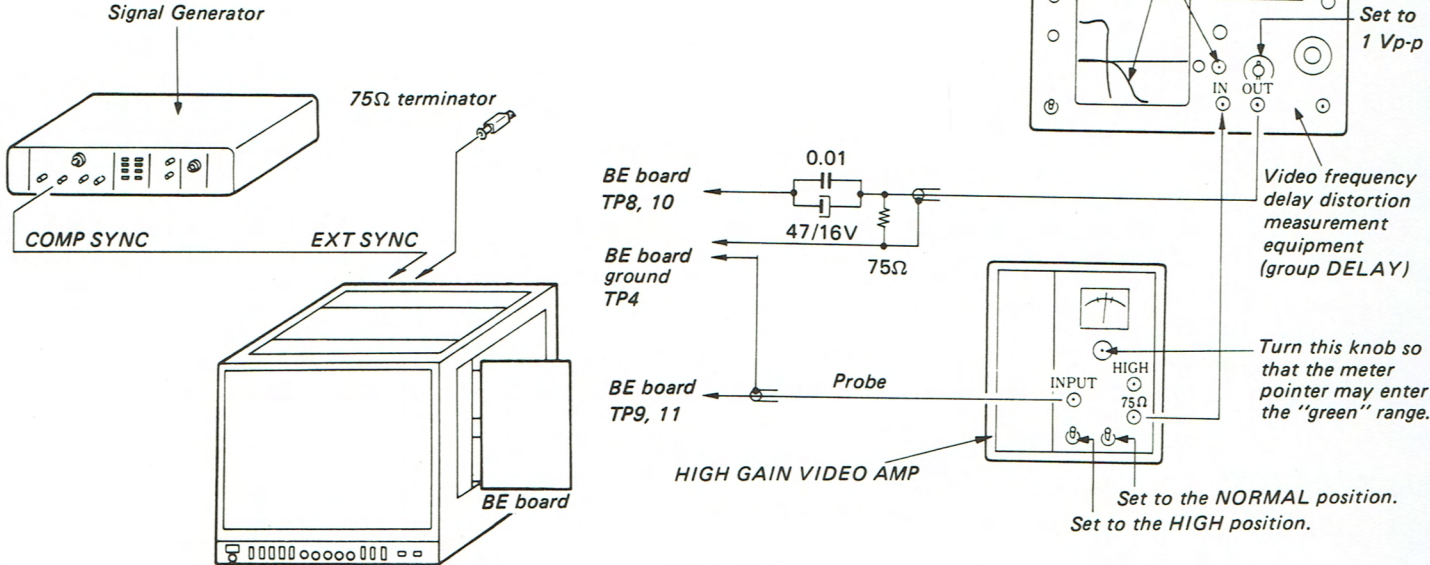


Fig. 18-1.

1. Complete the connections as shown in Fig. 18-1. Turn on the power of this monitor, and set the SYNC switch to the EXT position.
2. Connect the output of the group DELAY measurement equipment to TP8 on the BE board via the capacitor, and connect the probe to TP9.
3. Adjust the group DELAY characteristic of the B-Y L.P. filter so that the flat area is maximum by turning L4 and L5 on the BE board. (See Fig. 18-2.)
4. Connect the output of the group DELAY measurement equipment to TP10, and the probe to TP11.
5. Adjust the R-Y L.P. filter in the same way as that in step 3 by turning L6 and L7 on the BE board.

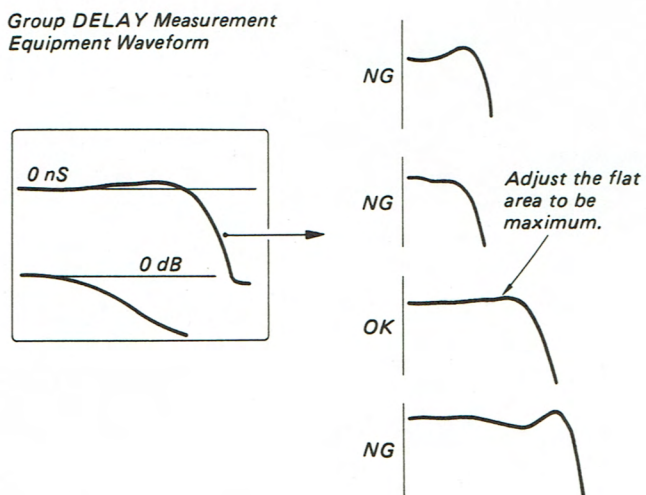


Fig. 18-2.

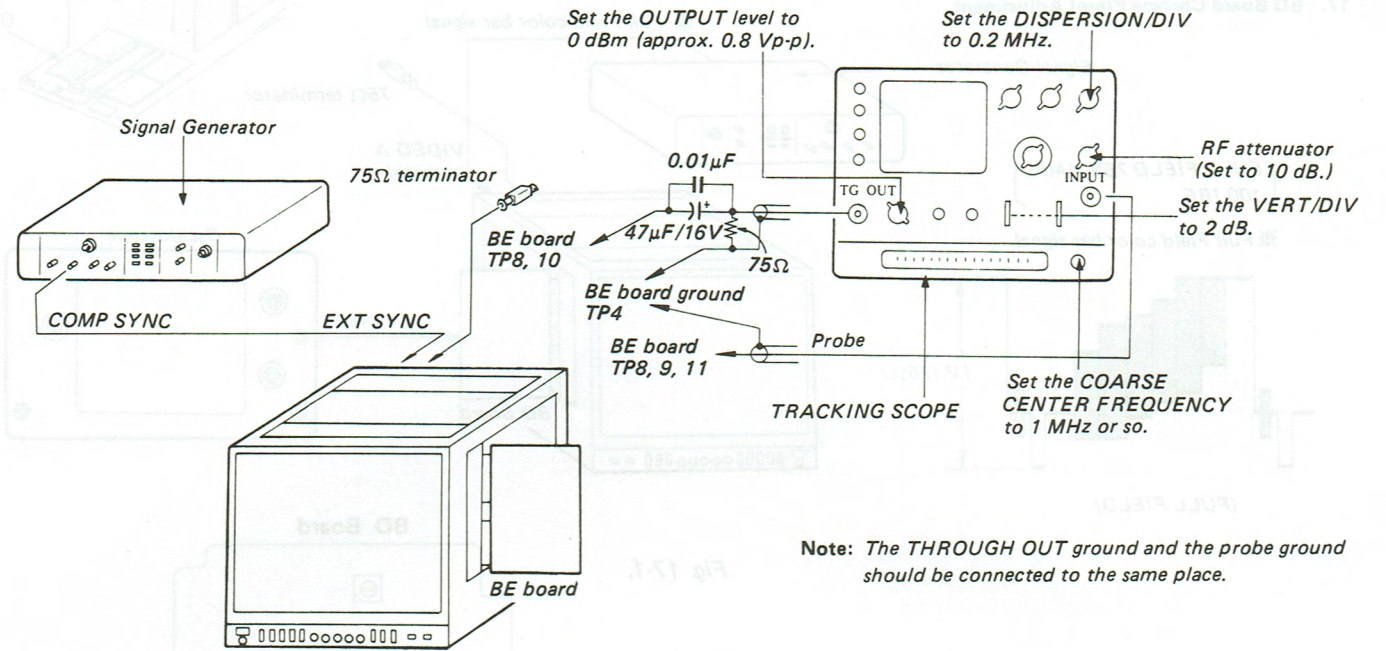
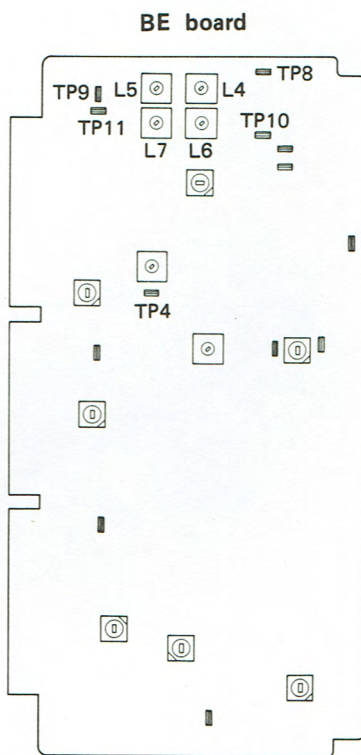


Fig. 18-3.

6. Complete the connections as shown in Fig. 18-3.
7. Connect the THROUGH OUT of the tracking scope to TP10 on the BE board via the capacitor, and connect the probe to TP10.
At this time, the output waveform indicated on the tracking scope should be flat (in the range of 0 to 2 MHz. (Probe calibration))
8. Connect the probe to TP11, and make sure the frequency characteristic of the R-Y L.P. filter circuit is within its specification. (See Fig. 18-4.)
9. Connect the THROUGH OUT signal to TP8, and the probe to TP9. Make sure the frequency characteristic of the B-Y L.P. filter circuit is within its specification. (See Fig. 18-4.)

Note: Adjustment should be made accurately using the signal generator and the attenuator, since neither the frequency nor LEVEL (dB) scales of the tracking scope are accurate.

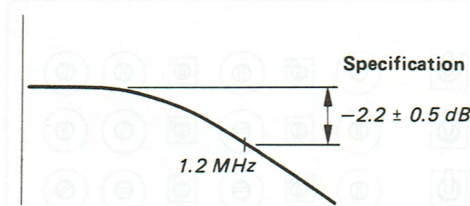
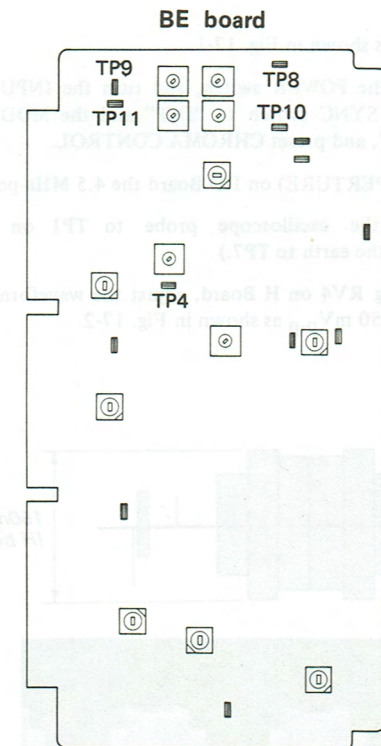


Fig. 18-4.



19. BE Board Burst Amplifier Adjustment

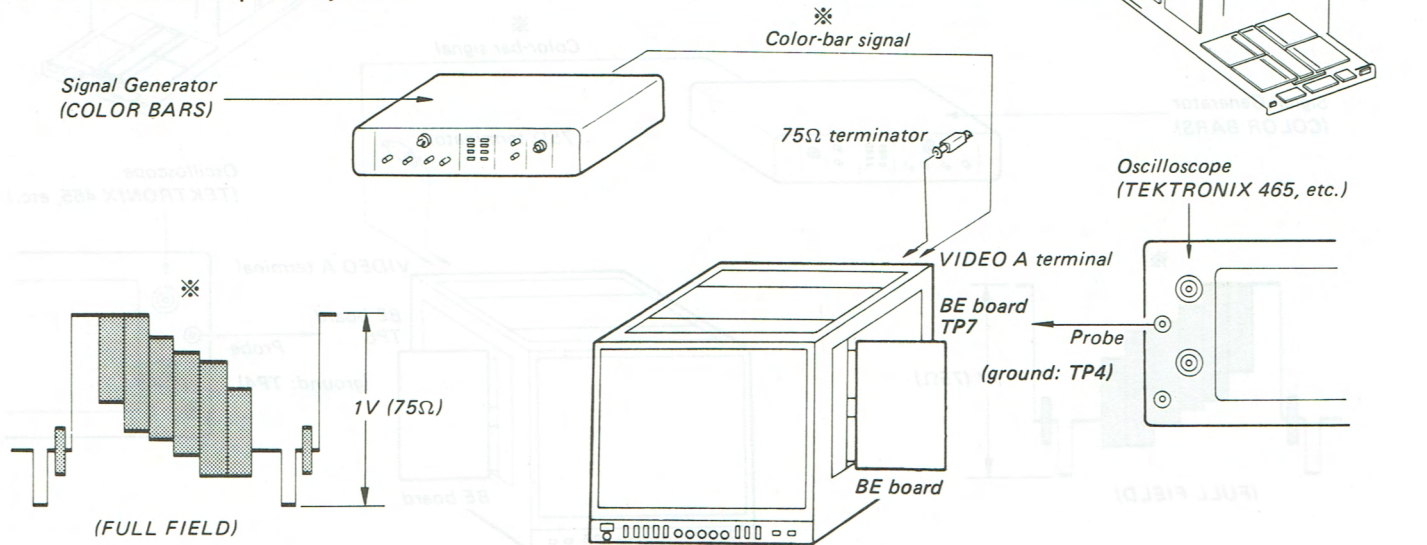
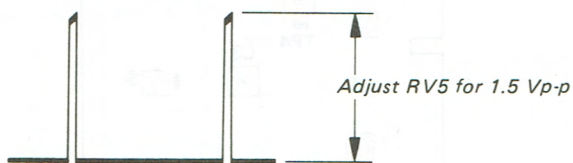


Fig. 19-1.

1. Complete the connections as shown in Fig. 19-1.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
3. Connect the oscilloscope probe to TP7 on the BE board.
4. Adjust RV5 on the BE board so that the oscilloscope output waveform is 1.5 Vp-p. (See Fig. 19-2.)

TP7 on the BE board



Specification 1.5 ± 0.1 Vp-p

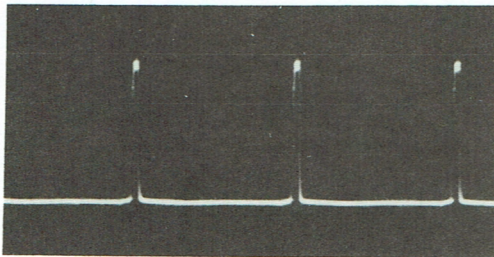
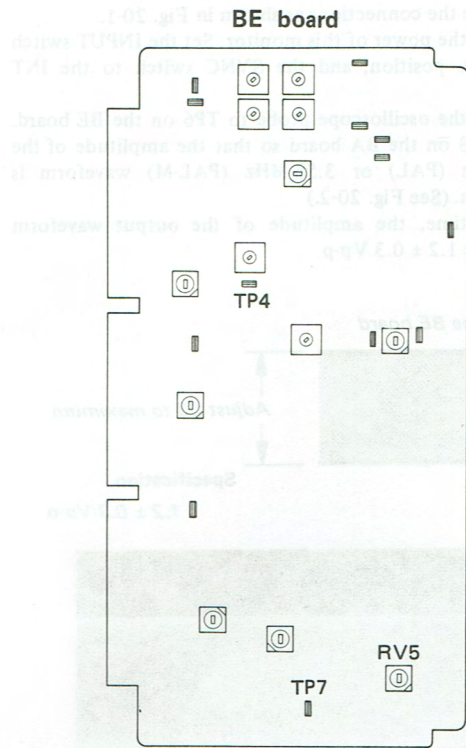


Fig. 19-2.



20. BE Board 4.43 MHz (PAL) or 3.58 MHz (PAL-M) Oscillator Amplitude Adjustment

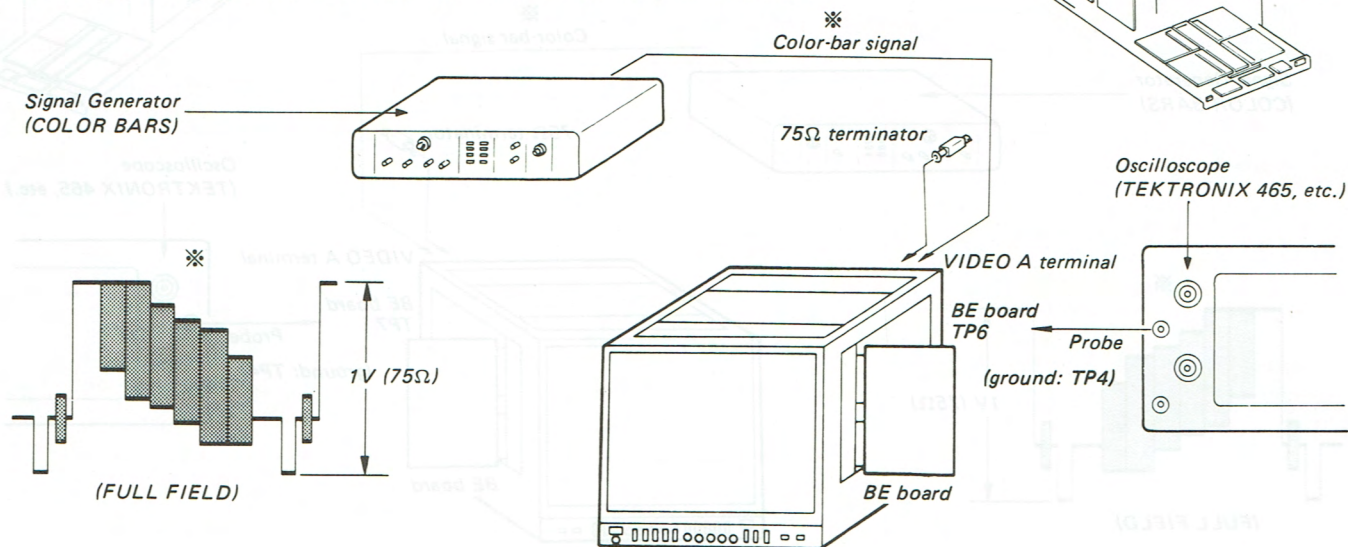


Fig. 20-1.

1. Complete the connections as shown in Fig. 20-1.
 2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
 3. Connect the oscilloscope probe to TP6 on the BE board.
 4. Adjust L3 on the BA board so that the amplitude of the 4.43 MHz (PAL) or 3.58 MHz (PAL-M) waveform is maximum. (See Fig. 20-2.)
- At this time, the amplitude of the output waveform should be 1.2 ± 0.3 Vp-p.

TP6 on the BE board

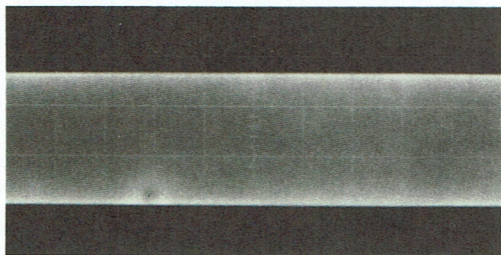
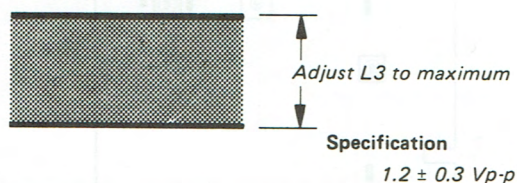
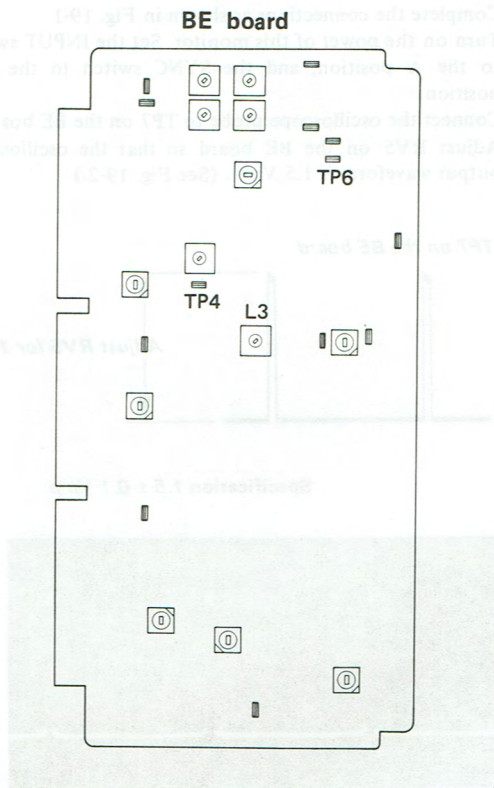


Fig. 20-2.



21. BE Board 4.43 MHz (PAL) or 3.58 MHz (PAL-M) Oscillator Free Run Adjustment

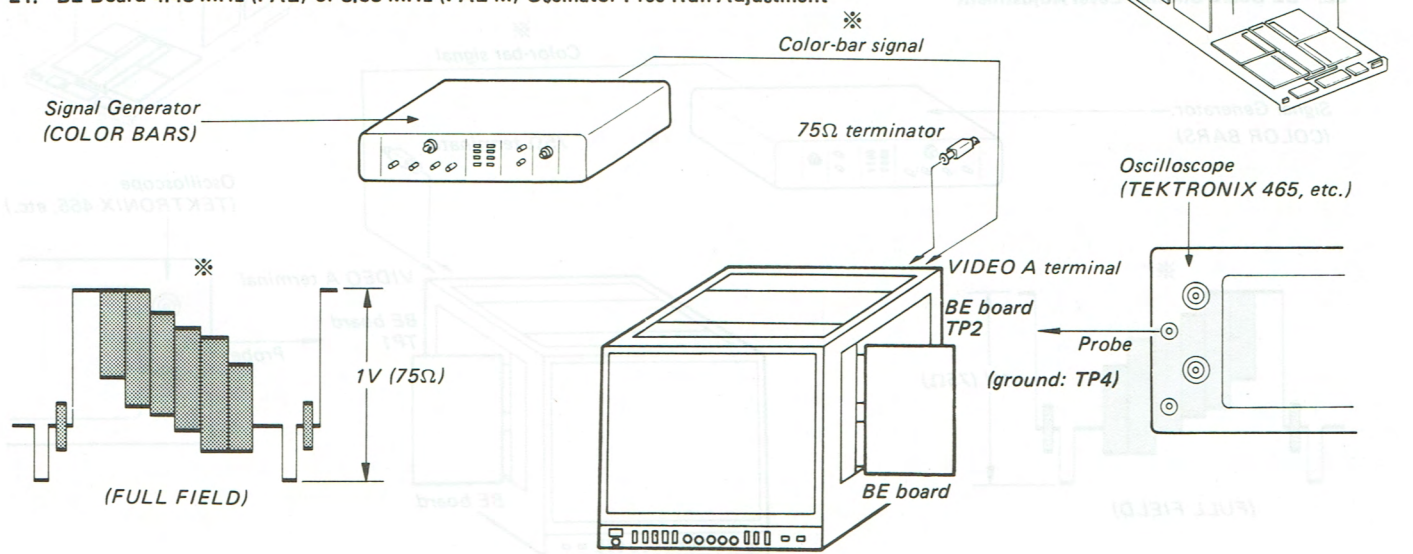
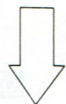
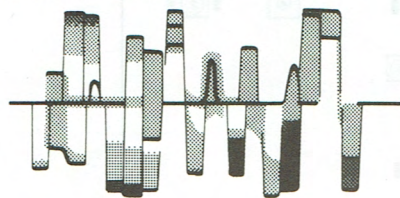


Fig. 21-1.

1. Complete the connections as shown in Fig. 21-1.
2. Connect TP5 on the BE board to TP4 ground.
3. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
4. Connect the oscilloscope probe to TP2 on the BE board.
5. Adjust RV4 on the BE board so that the output waveform is shifted slowly. (See Fig. 21-2.)
6. Turn off the power of this monitor, and disconnect TP5 and TP4.

TP2 on the BE board



Adjust the output waveform to be shifted slowly as if it stop.

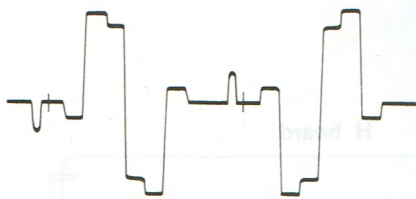
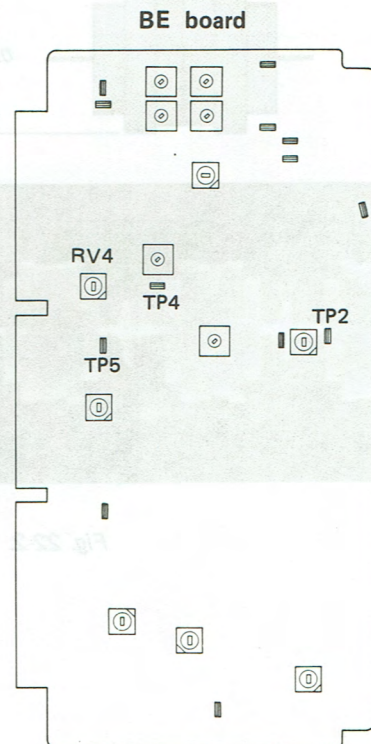
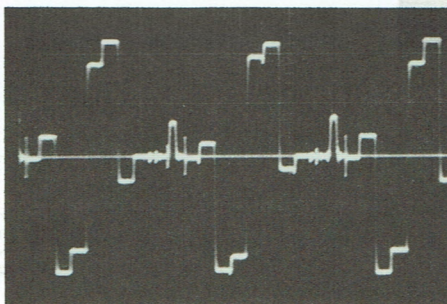
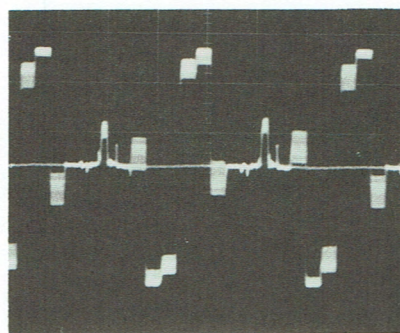


Fig. 21-2.



22. BE Board Chroma Level Adjustment

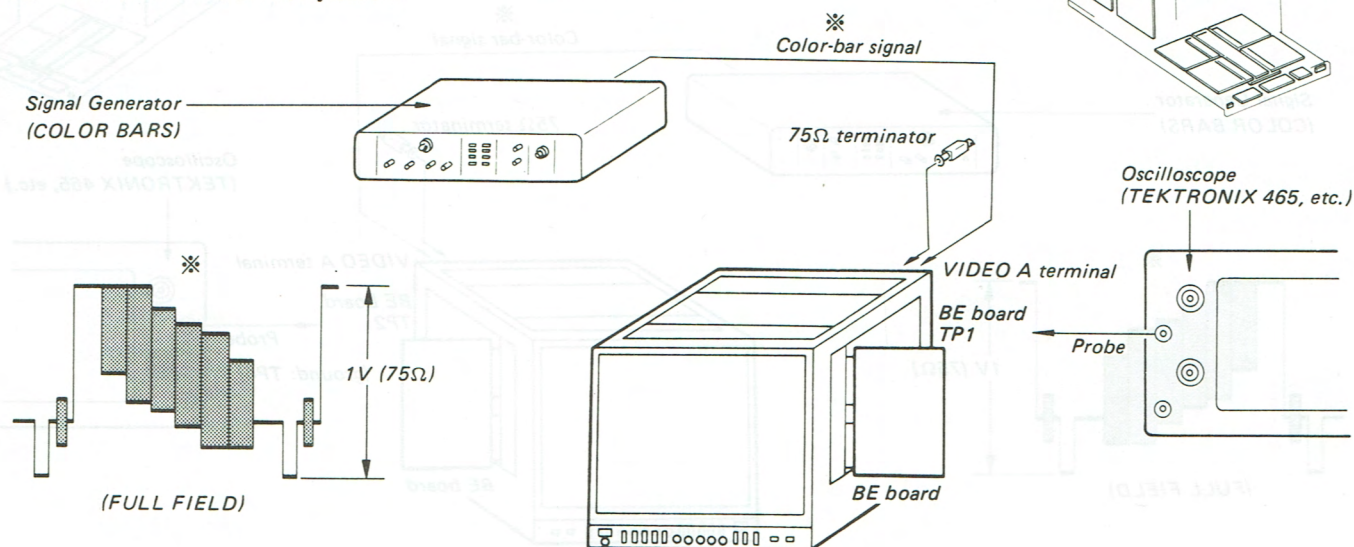


Fig. 22-1.

1. Complete the connections as shown in Fig. 22-1.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
3. Connect the oscilloscope probe to TP1 on the BE board.
4. Adjust RV4 on H board so that the output waveform is 0.15 Vp-p. (See Fig. 22-2.)

TP1 on the BE board

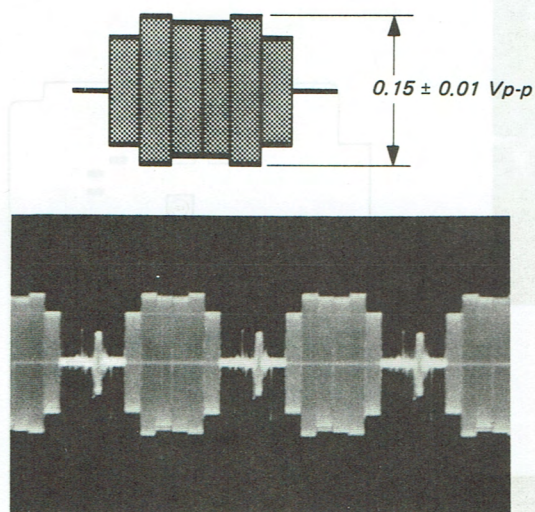
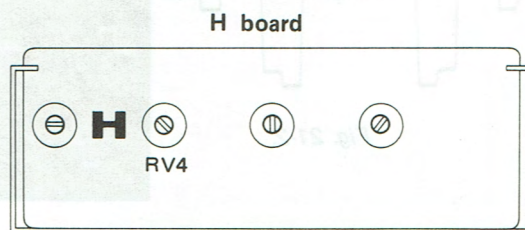
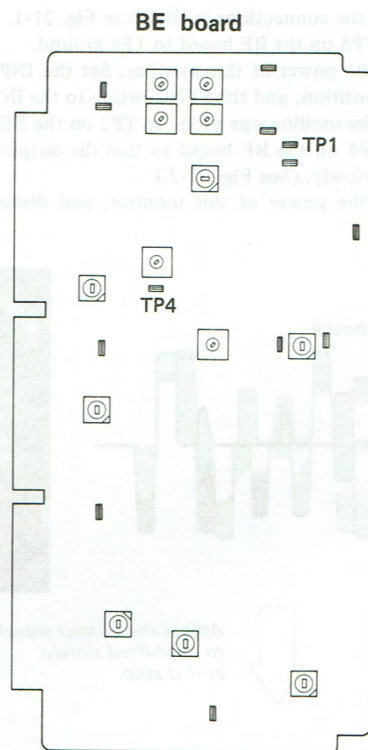


Fig. 22-2.



23. BE Board Color Difference Clamp Level Adjustment

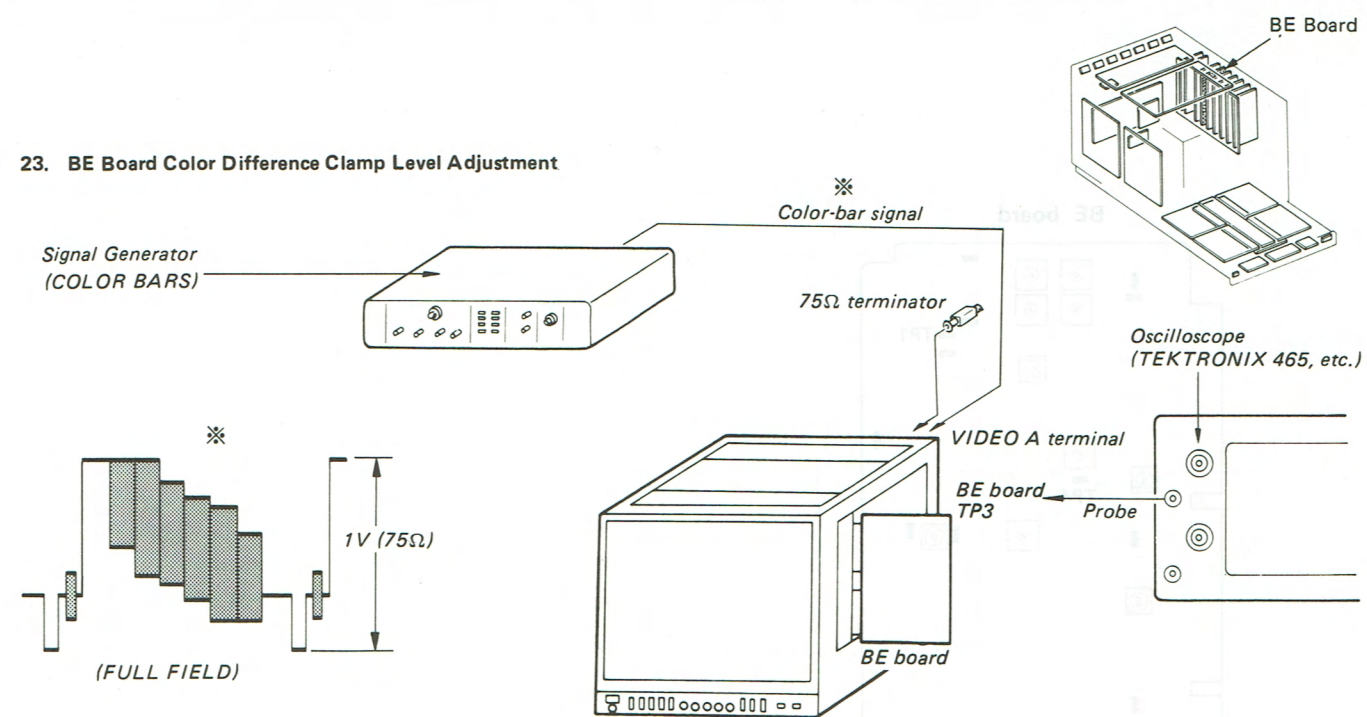


Fig. 23-1.

1. Complete the connections as shown in Fig. 23-1.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
3. Turn the CHROMA control fully counterclockwise.
4. Connect the oscilloscope probe to TP3 on the BE board.
5. Set the oscilloscope sensitivity to 50mV/DIV, and adjust RV1 on the BE board so that the DC level of the output waveform is 0Vdc. (See Fig. 23-2.)

Specification $0 \pm 30 \text{ mVdc}$

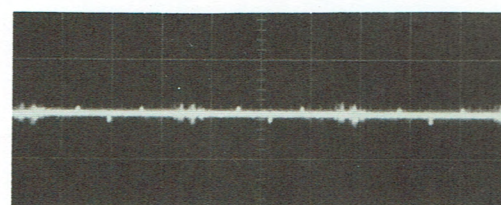
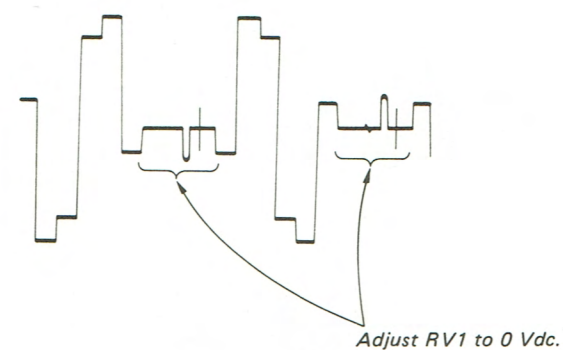
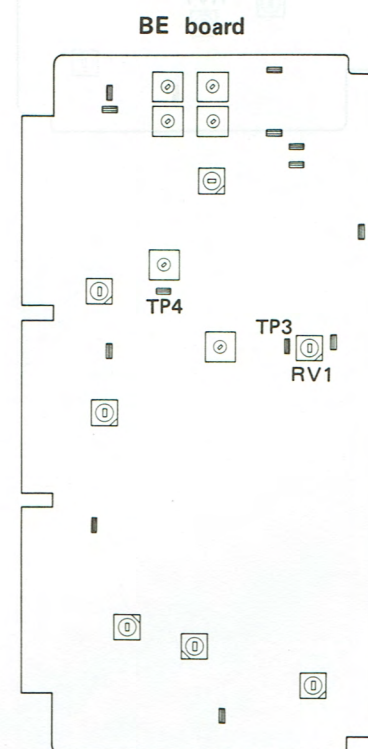


Fig. 23-2.



24. BE Board ID Adjustment

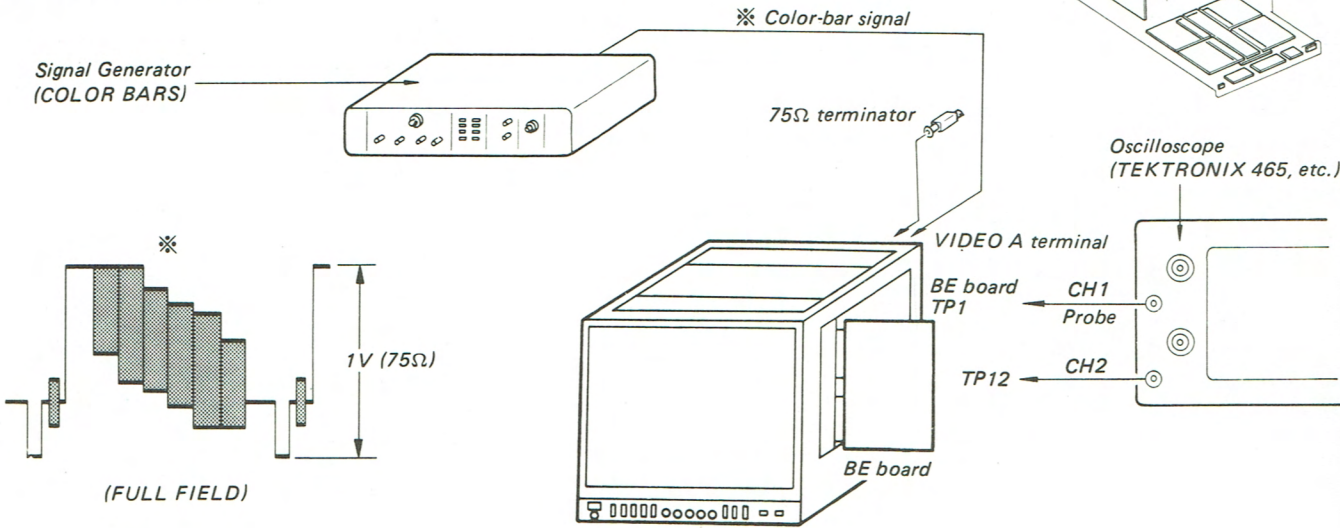
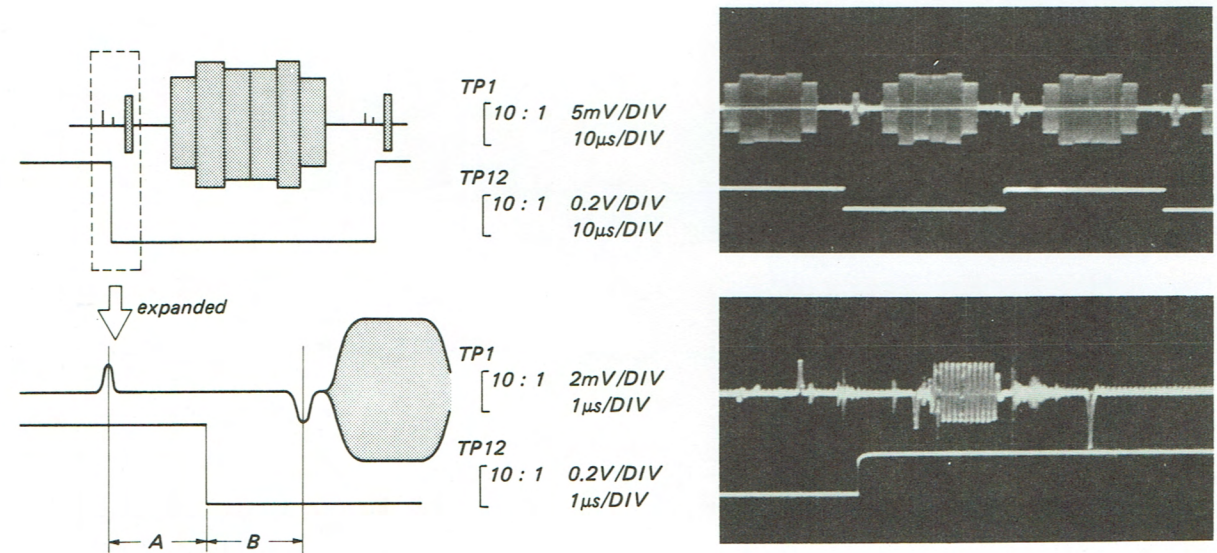


Fig. 24-1.

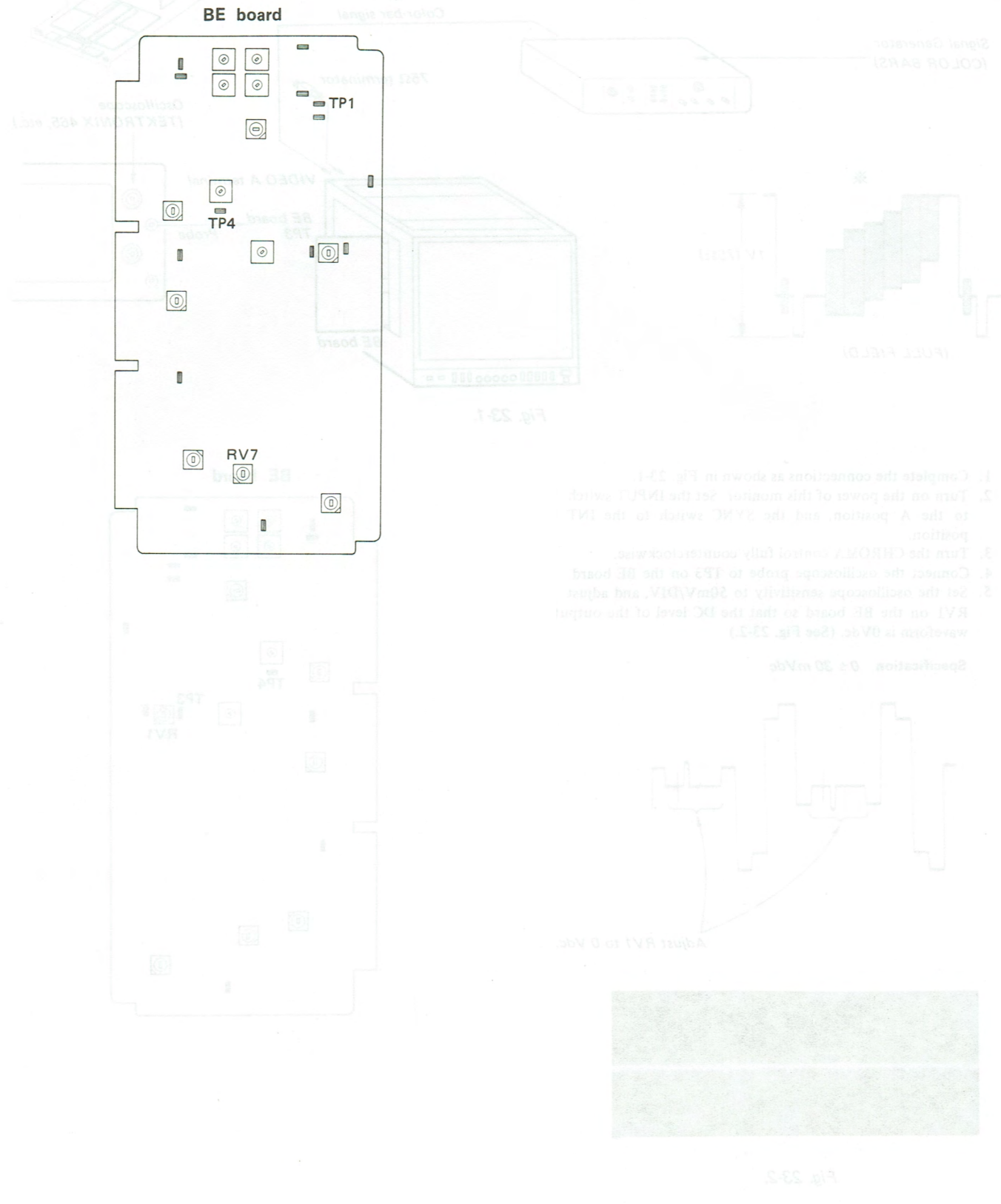
1. Complete the connections as shown in Fig. 24-1.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
3. Connect the oscilloscope probe CH1 to TP1 on the BE board, and the CH2 to TP12.
4. Set the oscilloscope TRIG SOURCE to CH2, and the A TRIGGER SLOPE to \oplus for synchronization.
5. Adjust RV7 on the BE board so that the output waveform is as shown in Fig. 24-2.

Note: If linearity adjustment has been made after this adjustment, readjust it.



Adjust RV7 to obtain the condition "A = B".

Fig. 24-2.



25. BE Board Burst Clamp Pulse Width Adjustment

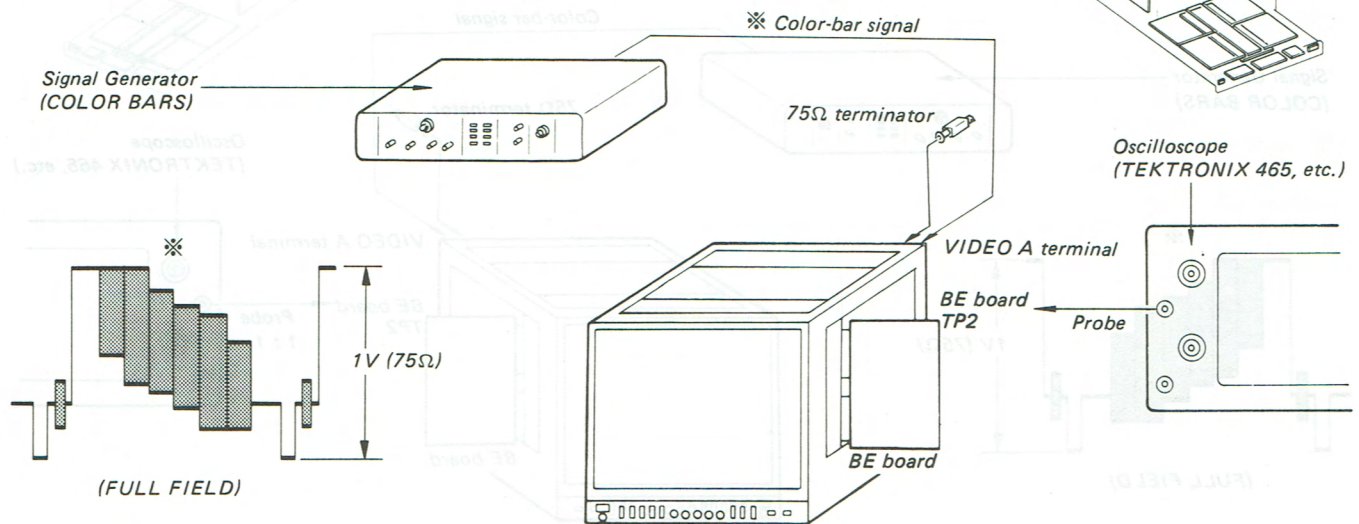


Fig. 25-1.

1. Complete the connections as shown in Fig. 25-1.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
3. Connect the oscilloscope probe to TP2 on the BE board.
4. Adjust RV6 on the BE board so that the burst clamp pulse width is $1\mu\text{s}$. (See Fig. 25-2.)

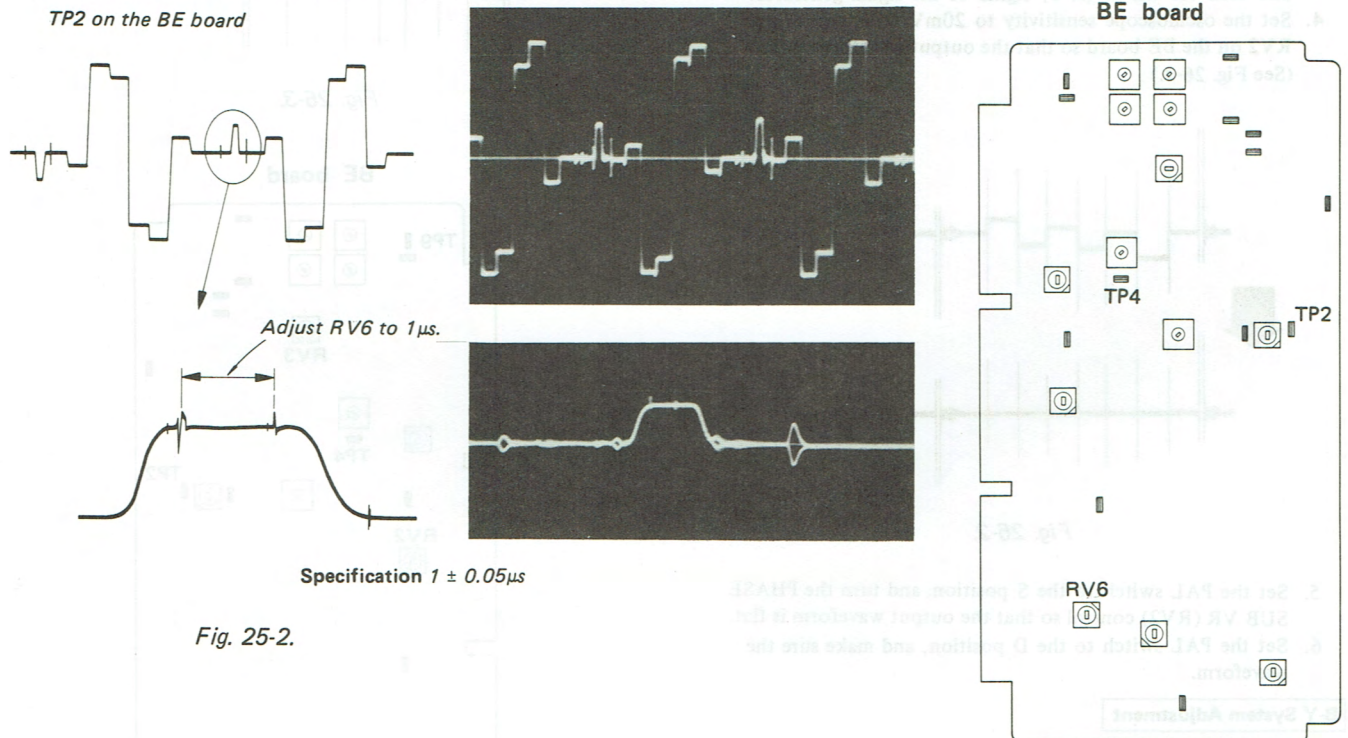


Fig. 25-2.

26. BE Board Color Difference Phase Adjustment

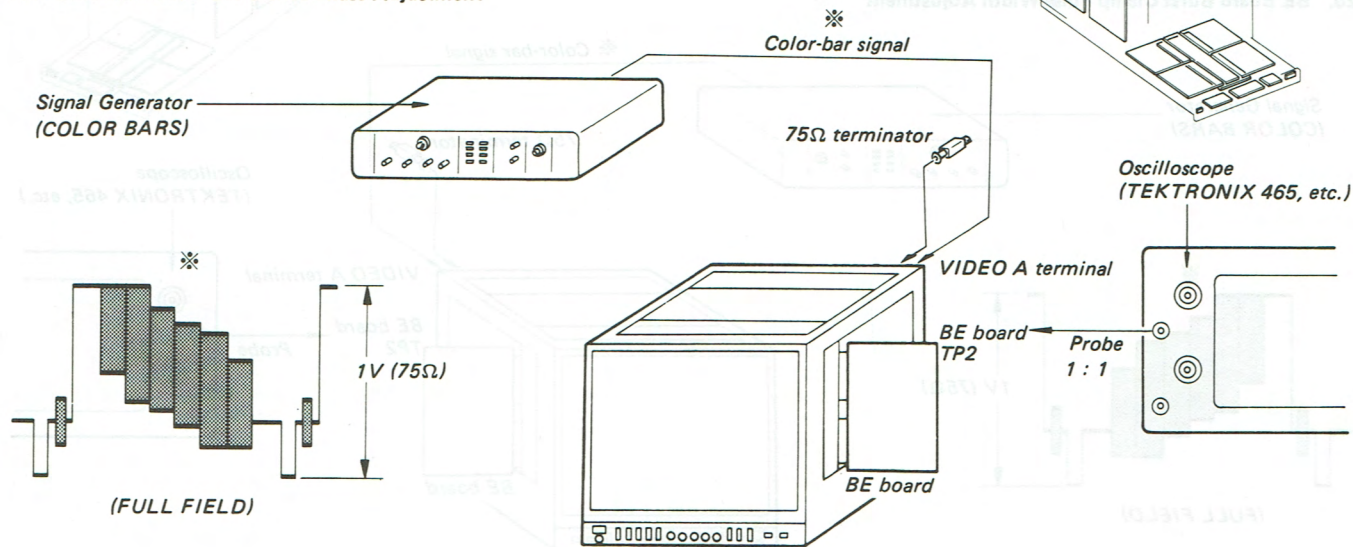


Fig. 26-1.

1. Complete the connections as shown in Fig. 26-1.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, the SYNC switch to the INT position, and the PAL switch to the D position.

R-Y System Adjustment

3. Connect the oscilloscope probe to TP2 on the BE board, and turn off the V (R-Y) signal of the signal generator.
4. Set the oscilloscope sensitivity to 20mV/DIV, and adjust RV2 on the BE board so that the output waveform is flat. (See Fig. 26-2.)

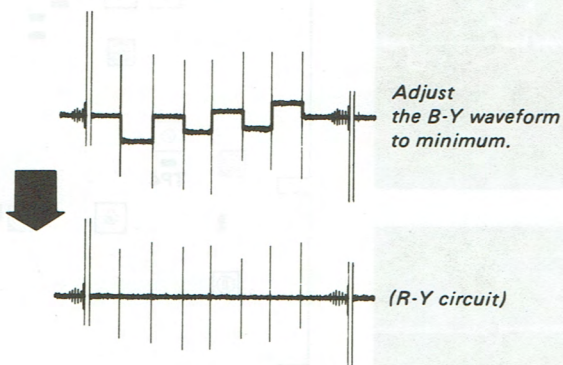


Fig. 26-2.

5. Set the PAL switch to the S position, and turn the PHASE SUB VR (RV2) control so that the output waveform is flat.
6. Set the PAL switch to the D position, and make sure the waveform.

B-Y System Adjustment

7. Connect the oscilloscope probe to TP9. Turn on the V signal of the signal generator, and turn off the U (B-Y) signal. Then adjust RV3 on the BE board so that the output waveform is flat. (See Fig. 26-3.)

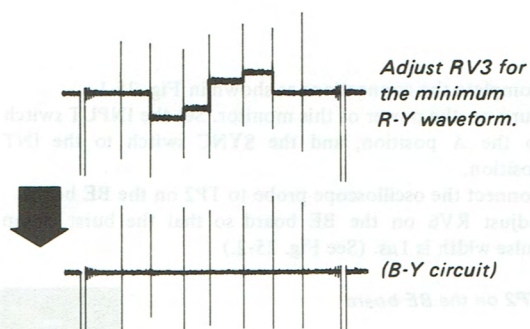
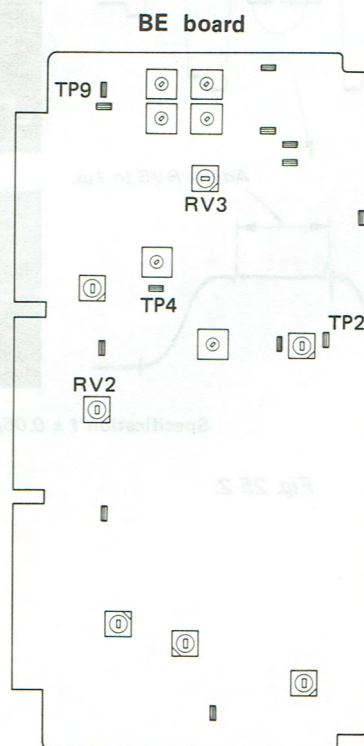
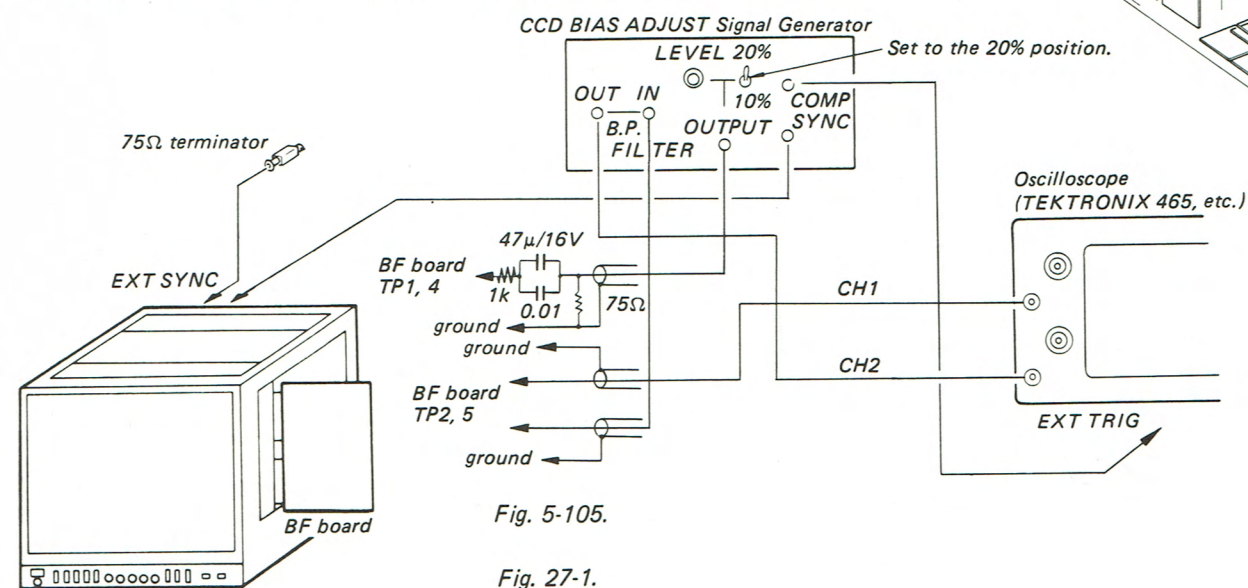


Fig. 26-3.



27. BF Board CCD (Charge Coupled Device) Bias Adjustment



1. Complete the connections as shown in Fig. 27-1.
2. Set RV1 and RV6 on the BF board to mechanical mid-position and turn RV2 and RV7 on BF board fully clockwise.
3. Turn on the power of this monitor. Set the SYNC switch to the EXT position.
4. Connect the output of the signal generator to TP1 on the BF board via the capacitor and resistor, and connect the probe of oscilloscope to TP2 on BF board.

Adjustment of R-Y CCD BIAS

5. Set the signal generator to the 20% position, and adjust the output LEVEL knob so that the oscilloscope output waveform is 650mV. (See Fig. 27-2.)
6. Set the VERT MODE of the oscilloscope to CH2.
7. Turn the voltage knob and time axis knob on the oscilloscope properly so that the output waveform is 5 and 8.5 divisions of the scale in the vertical and horizontal directions. (See Fig. 27-3.)
8. Adjust RV3 on BF board so that the four corners shown by arrows have same curve, and confirm that A and B are more than 4 divisions as shown in Fig. 27-4.
9. Set the VERT MODE of the oscilloscope to CH1. (At this time set the voltage and time axis knobs to normal position.)
10. Adjust the LEVEL knob of the signal generator so that the oscilloscope output waveform is 250mV. (See Fig. 27-5.)
11. Set the VERT MODE of the oscilloscope to CH2.
12. Turn the voltage knob and time axis knob on the oscilloscope properly so that the output waveform is 5 and 8.5 divisions of the scale in the vertical and horizontal directions as same as step 7. (See Fig. 27-3.)
13. Confirm that the waveform gain of 7 divisions from the last limb is 4.8 division or more. (Differential gain should be 3% or less. See Fig. 27-6.)
14. Connect the cable, which has been connected to TP1 on the BF board, to TP4, and connect TP5 to the oscilloscope and signal generator input.

Adjustment of B-Y CCD BIAS

15. Adjust the oscilloscope output waveform to be 650mV in the same way as that in step 5.
16. Adjust RV8 on the BF board in the same way at that in each step through 13.

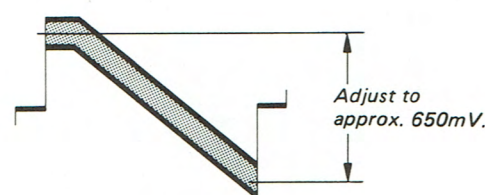


Fig. 27-2.

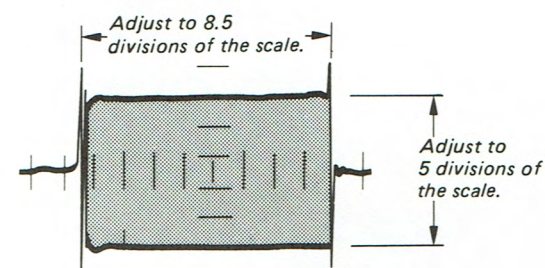


Fig. 27-3.

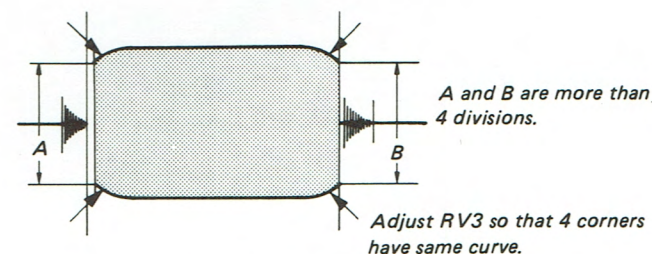


Fig. 27-4.

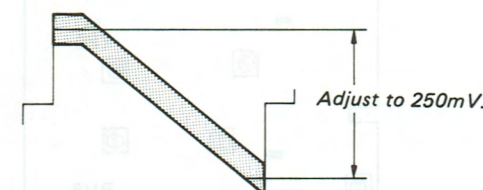
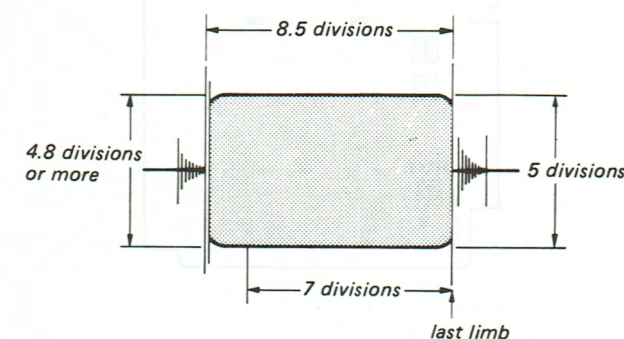


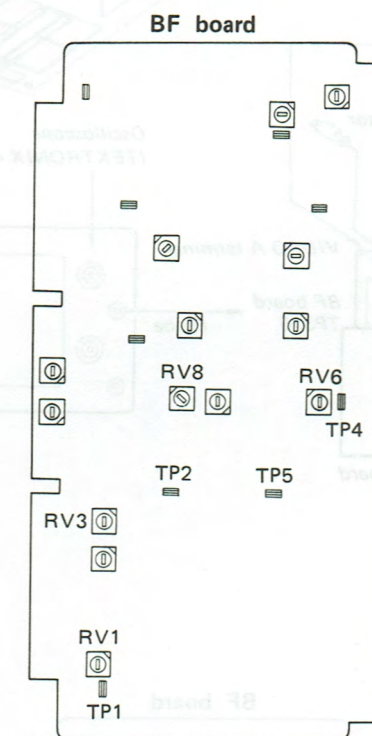
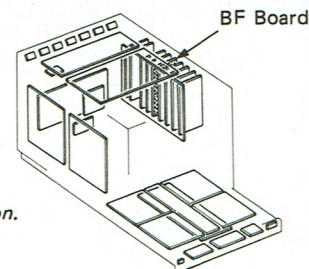
Fig. 27-5.



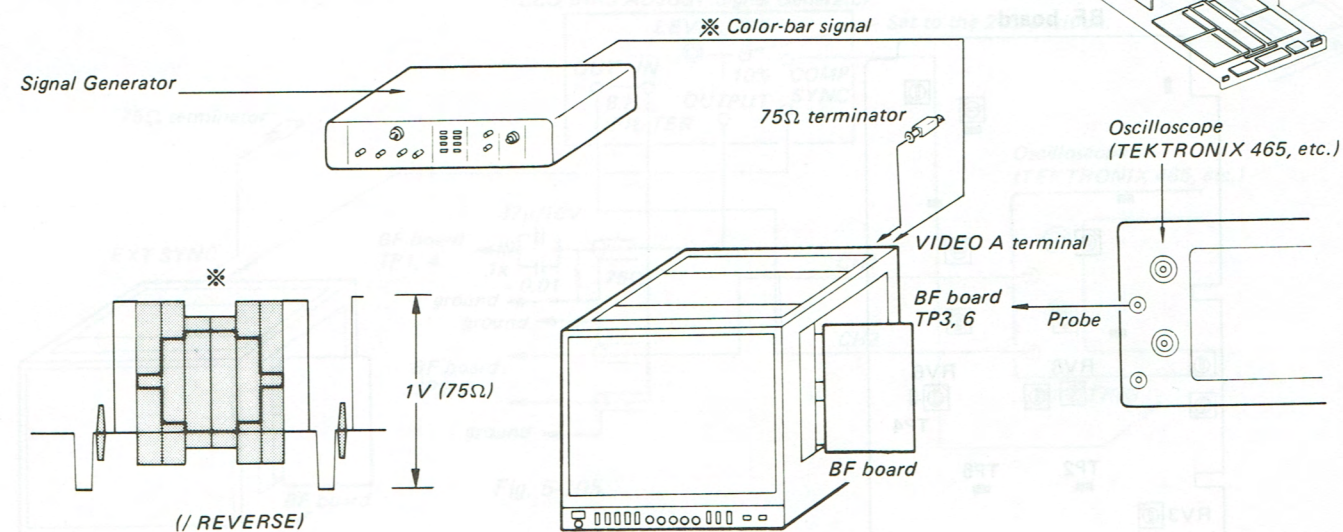
Specification: DG 3% or less

$$\text{(example of above figure)} \\ DG = \frac{5 - 4.8}{5 + 4.8} \times 100 \approx 2\%$$

Fig. 27-6.

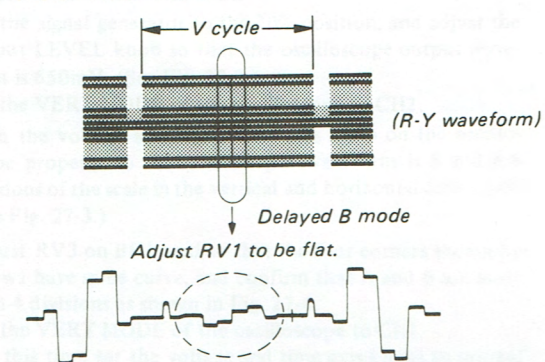


28. BF Board PAL-D Gain Adjustment

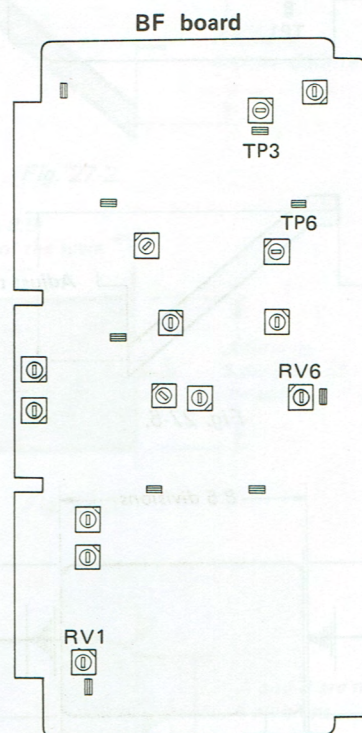
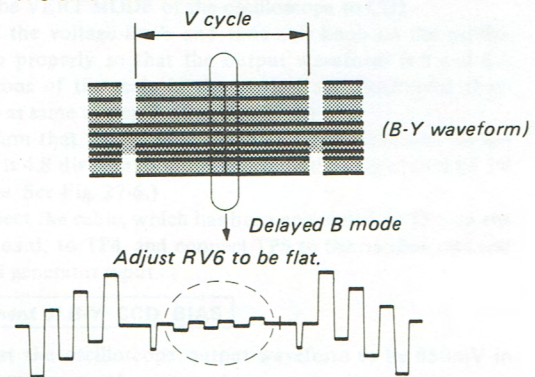


1. Complete the connections as shown in Fig. 28-1.
Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
2. Connect the oscilloscope probe to TP3 on the BF board.
3. Set the oscilloscope sensitivity to 0.2V/DIV, and adjust RV1 on the BF board so that the area designated in Fig. 28-2 is flat.
4. Connect the oscilloscope probe to TP6, and adjust RV6 on the BF board so that the area designated in Fig. 28-3 is flat.

TP3 on the BF board



TP6 on the BF board



Signal Generator (COLOR BARS)

Color-bar signal

75Ω terminator

VIDEO A terminal

BG board

BF board

Oscilloscope (TEKTRONIX 465, etc.)

Probe

1V (75Ω)

FULL FIELD WHITE REF 75%

1. Complete the connections as shown in Fig. 29-1.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.

R-Y Level Adjustment

3. Set the PAL switch to the S position.
4. Connect the oscilloscope probe to TP1 on the BG board, and adjust RV5 on the BF board to obtain the correct R-Y waveform as shown in Fig. 29-2.

(Adjust the levels indicated with ✖ to the same
respectively using RV5 on the BF board.)

B-Y Level Adjustment

5. Connect the oscilloscope probe to TP5 on the BG board, and adjust RV10 on the BF board to obtain the correct B-Y waveform as shown in Fig. 29-3.

(Adjust the levels indicated with * to the same \ respectively using RV10 on the BF board.

G-Y Level Adjustment

6. Connect the oscilloscope probe to TP3 on the BG board, and adjust RV11 and 12 on the BF board to obtain the correct G-Y waveform as shown in Fig. 29-4.

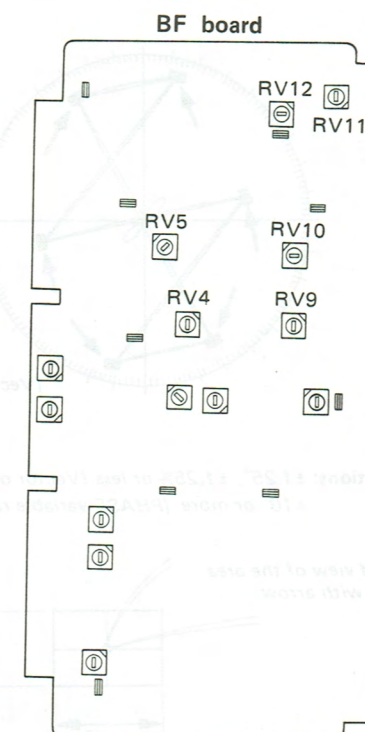
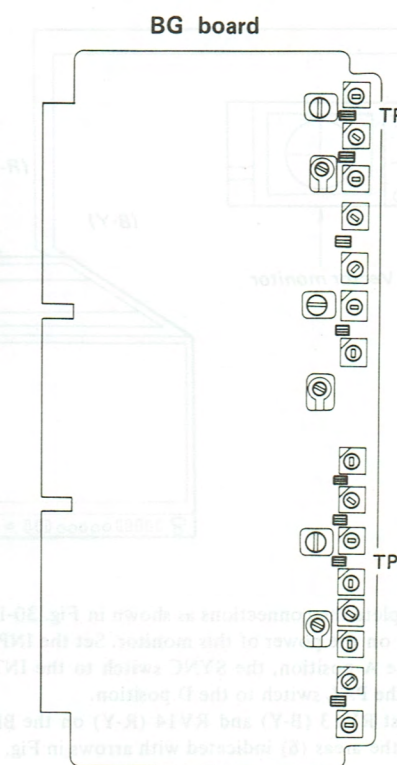
(Adjust the levels indicated with ✕ to the same respectively using RV11 and RV12 on the BF board.

Fig. 29-4.

PAL-D

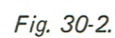
7. Set the PAL switch to the D position.
8. Connect the oscilloscope probe to TP1 on the BG board, and adjust the R-Y level using RV4 on the BF board in the same way as for PAL-S level adjustment.
9. Connect the oscilloscope probe to TP5 on the BG board, and adjust the B-Y level using RV9 on the BF board in the same way as for PAL-S level adjustment.
10. Make sure the color difference phase adjustment (BE board).
11. Repeat the adjustment in step 3 to 10 until each level becomes steady.

Note: Set the oscilloscope time axis knob to 0.1ms/DIV, and perform every adjustment accurately.

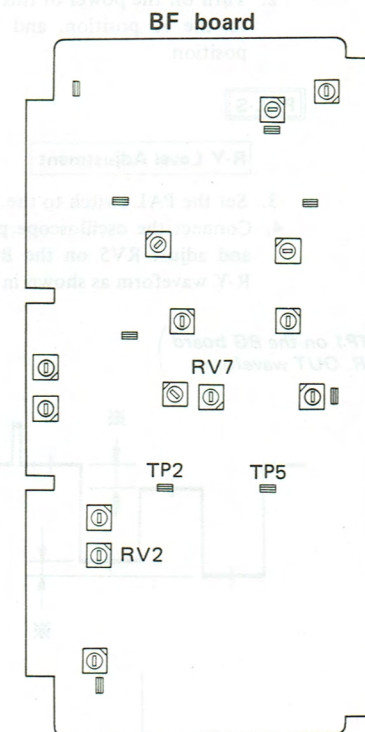
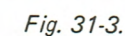
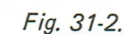


1. Complete the connections as shown in Fig. 30-1.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, the SYNC switch to the INT position, and the PAL switch to the D position.
3. Adjust RV13 (B-Y) and RV14 (R-Y) on the BF board so that the areas (6) indicated with arrows in Fig. 30-2 enter its center as far as possible.

4. Set the INPUT switch to the B and TEST positions, and make sure each of them is within its specification.
5. Make sure both color phase and level do not change when turning the PHASE control from the minimum to the maximum. (Observe the vector monitor.)
6. Set the PAL switch to the S position.
7. Make sure the color phase changes by $\pm 10^\circ$ or more when turning the PHASE control from the minimum to the maximum. (Observe the vector monitor.)
8. Make sure the vector output does not change when changing the PAL switch set position from D to S and vice versa. (Click the PHASE control.)



1. Complete the connections as shown in Fig. 31-1.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT.
3. Connect the oscilloscope probe to TP2 on the BF board.
4. Disconnect the 75 Ω terminator of the VIDEO A terminal.
5. Turn the CHROMA control fully clockwise.
6. Adjust RV2 so that the lower position of the waveform is higher than the pedestal level by 320 mV as shown in Fig. 31-2.
7. Connect the oscilloscope probe to TP5 on the BF board.
8. Adjust RV7 as well as in step 6. (Fig. 31-3)



32. BG Board Set up Level Adjustment

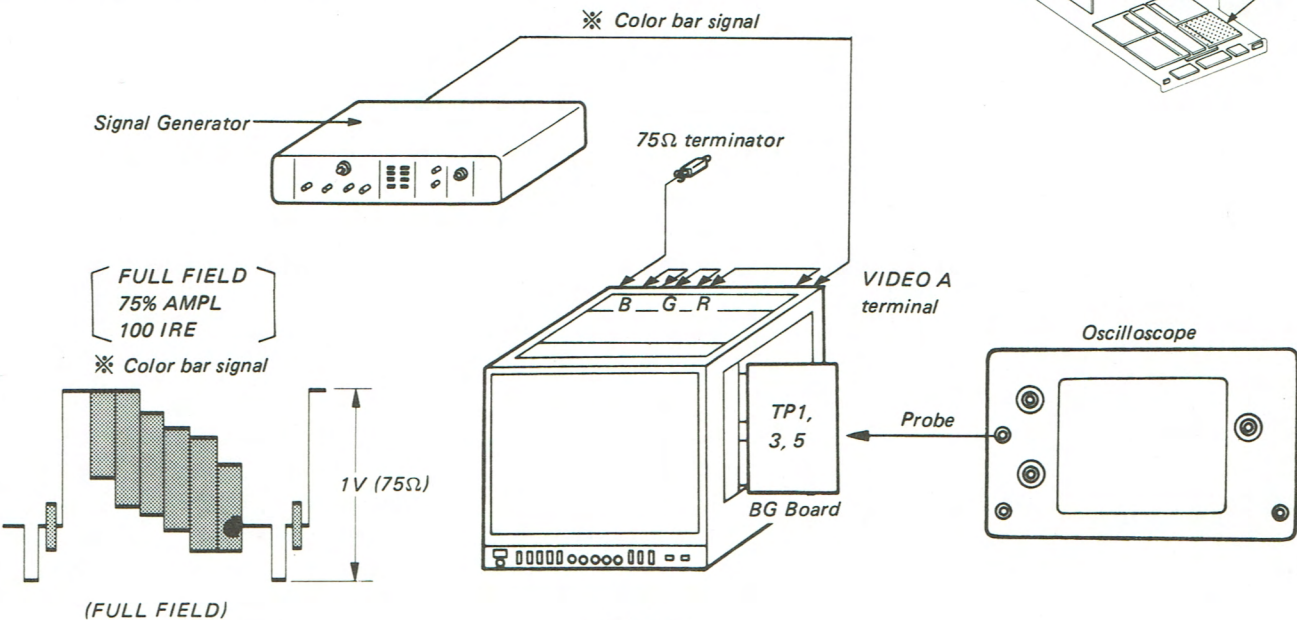


Fig. 32-1.

1. Connect as shown in Fig. 32-1.
2. Turn the set on and set INPUT switch to A, SYNC switch to INT, and MODE switch to B/W.
3. Set RV19 (RGB. SET) and RV20 (COMP. SET) on DD Board as shown in Fig. 32-2.

Adjustment of COMP system set up

4. Connect the oscilloscope probe to TP3 on BG Board.
5. Turn RV13 on BG Board to align the black level of waveform (G signal) on oscilloscope with the screening level. See Fig. 32-3. (oscilloscope at maximum voltage sensitivity)
6. Set MODE switch of the set to AUTO position.

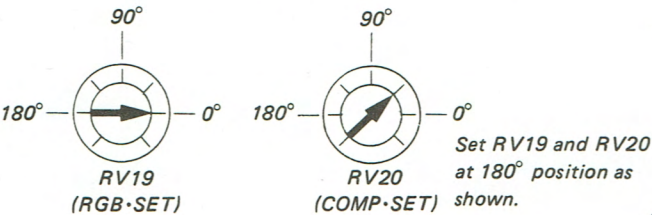


Fig. 32-2.

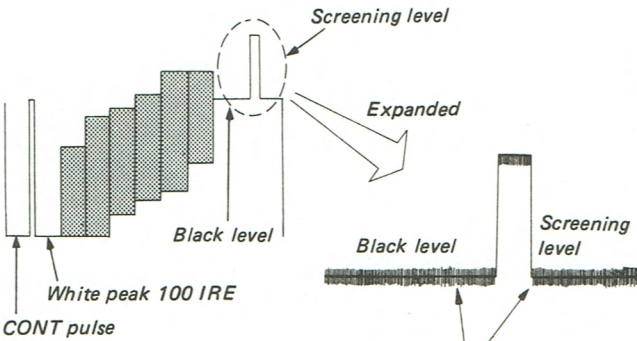


Fig. 32-3.

7. Connect the oscilloscope probe to TP1 on BG Board and turn RV1 on BG Board as described in step 5. See Fig. 32-4.
8. Connect the oscilloscope probe to TP3 on BG Board and turn RV5 on BG Board as described in step 5. See Fig. 32-4.
9. Connect the oscilloscope probe to TP5 on BG Board and turn RV9 on BG Board as described in step 5. See Fig. 32-4.

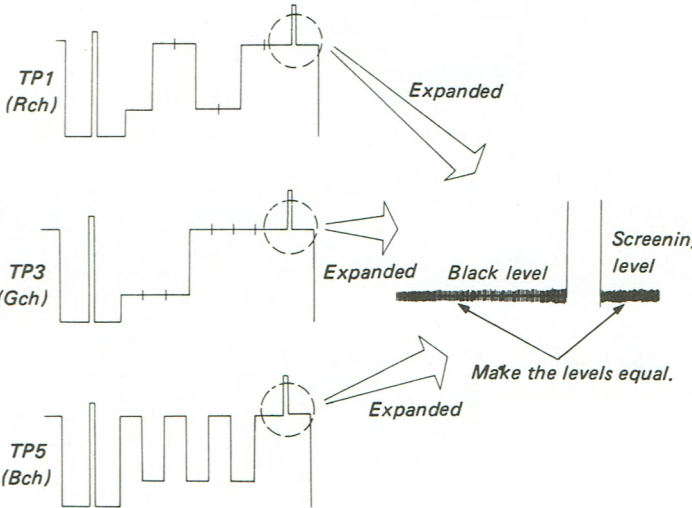
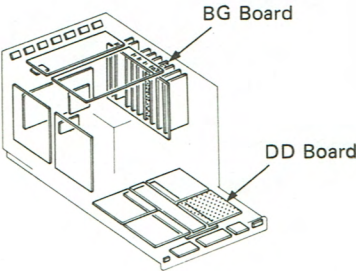


Fig. 32-4.



Adjustment of RGB set-up

10. Set INPUT switch of the set to RGB.
11. Connect the oscilloscope probe to TP1 on BG Board.
12. Turn RV3 on BG Board to align the black level of waveform (R signal) on oscilloscope with the screening level. Fig. 32-5. (oscilloscope at maximum voltage sensitivity)
13. Connect the oscilloscope probe to TP3 on BG Board and turn RV7 on BG Board as described in step 12. See Fig. 32-5.
14. Connect the oscilloscope probe to TP5 on BG Board and turn RV11 on BG Board as described in step 12. See Fig. 32-5.
15. Set INPUT switch of the set to A.

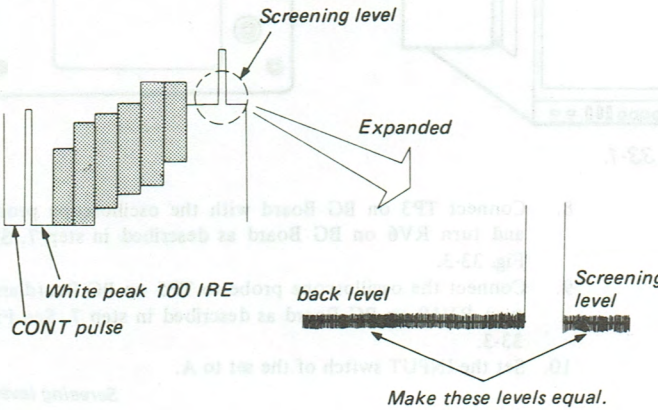
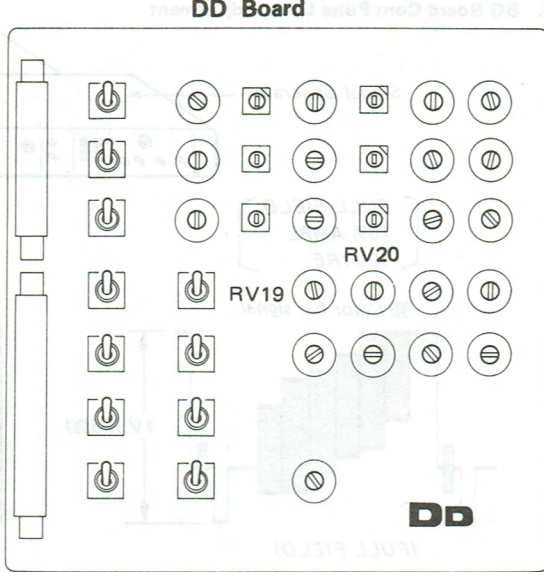
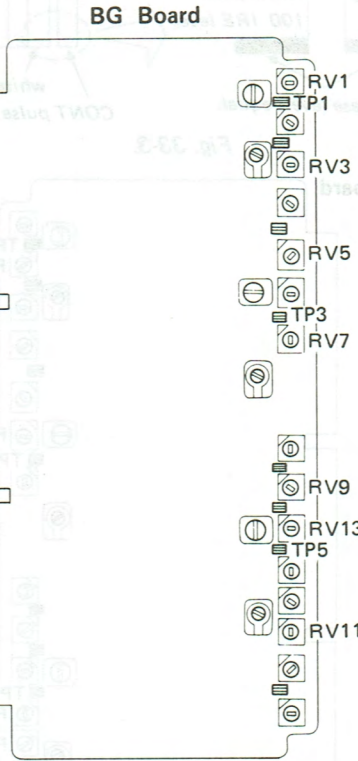


Fig. 32-5.



33. BG Board Cont Pulse Level Adjustment

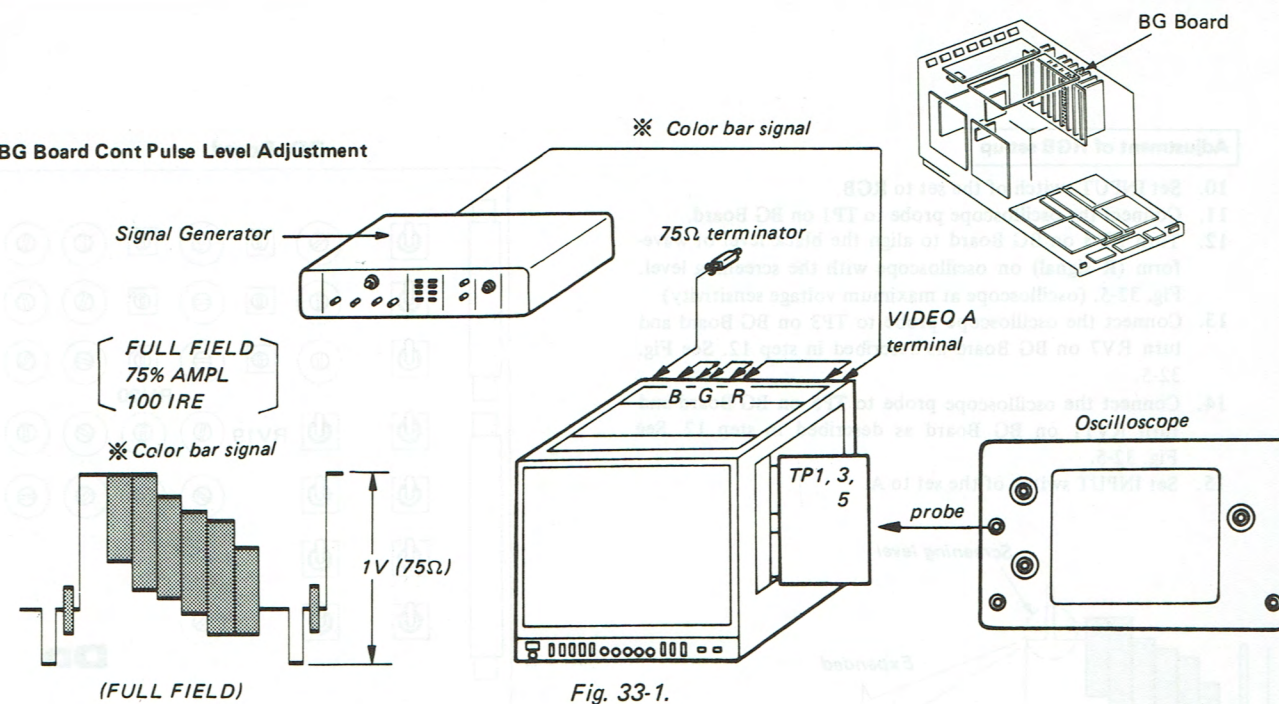


Fig. 33-1.

1. Connect as shown in Fig. 33-1.
2. Turn the set off and set INPUT switch to A, SYNC switch to INT, and MODE switch to AUTO.

Adjustment of CONT pulse level of COMP system

3. Connect the oscilloscope probe to TP3 on BG Board.
4. Turn RV14 on BG substrate to align the white peak 100 IRE level of waveform (G signal) on oscilloscope with the peak level of CONT pulse. See Fig. 33-2. (oscilloscope at maximum voltage sensitivity)

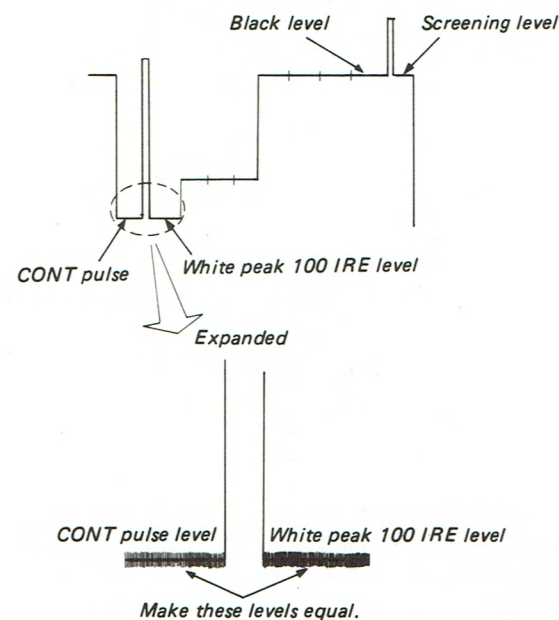


Fig. 33-2.

Adjustment of CONT pulse level of RGB system

5. Set INPUT switch of the set to RGB.
6. Connect the oscilloscope probe to TP1 on BG Board.
7. Turn RV2 on BG Board to align the white peak 100 IRE level of waveform on oscilloscope (R signal) with the peak level of CONT pulse. See Fig. 33-3. (oscilloscope at maximum voltage sensitivity)

8. Connect TP3 on BG Board with the oscilloscope probe and turn RV6 on BG Board as described in step 7. See Fig. 33-3.
9. Connect the oscilloscope probe to TP5 on BG Board and turn RV10 on BG Board as described in step 7. See Fig. 33-3.
10. Set the INPUT switch of the set to A.

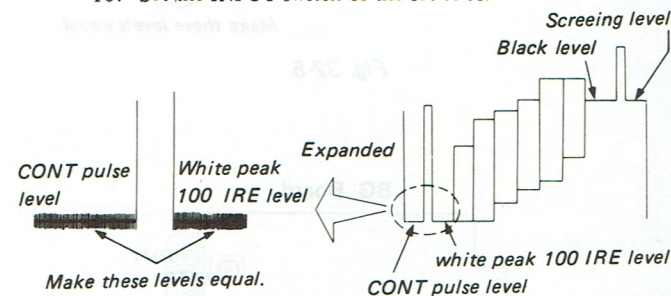
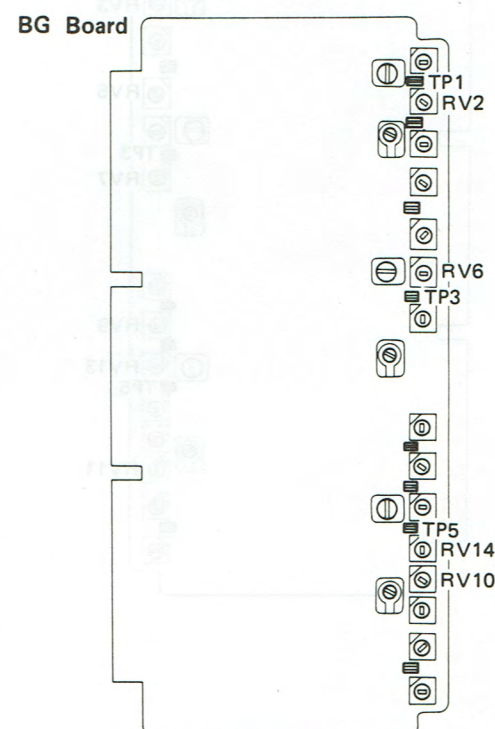


Fig. 33-3.



34. BG Board Decoder out Adjustment

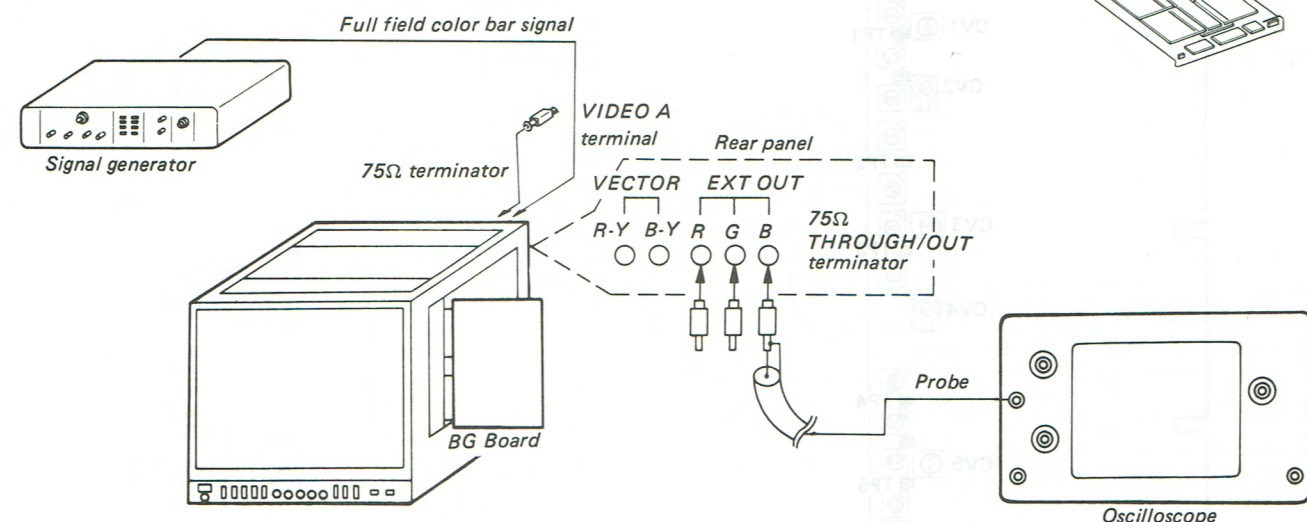


Fig. 34-1.

1. Connect as shown in Fig. 34-1.
2. Confirm that the input signals of Fig. 34-1 are FULL FIELD, 75% AMPL, and WHITE REF 75 IRE.
3. Terminate EXT OUT R.G.B. output of the set with a 75Ω THROUGH/OUT terminator.
4. Turn the set on and set INPUT switch to A, MODE switch to AUTO, and SYNC switch to INT positions.
5. Connect the oscilloscope probe to a 75Ω THROUGH/OUT terminal of the EXT OUT B terminal.
6. Align RV15 on BG Board so that the waveform on the oscilloscope will be flat as shown in Fig. 34-2.

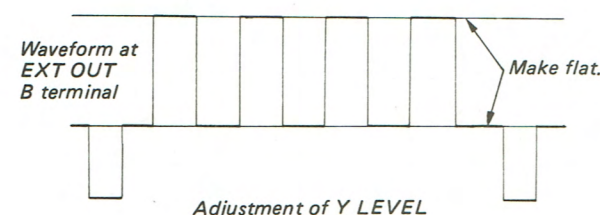
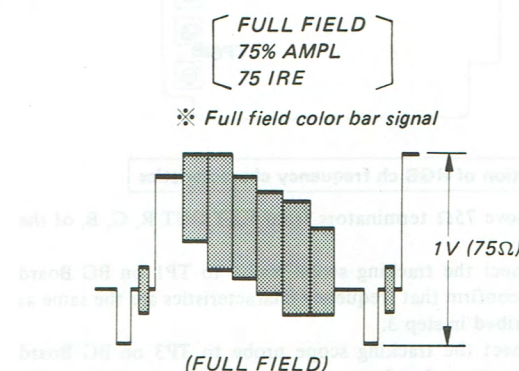


Fig. 34-2.

7. Connect the probe of the oscilloscope to the EXT OUT R, G terminals with 75 ohm through-out as in 5 and check the output waveform is correct (matrix adjustment, level).



Adjustment of EXT OUT LEVEL

8. Connect as shown in Fig. 34-3.
9. Check that the input signal of Fig. 34-3 is FULL FIELD, 75% AMPL, 0% SET UP and WHITE REF 100 IRE.
10. Connect the CH1 probe of the oscilloscope (7A26) to the 75 ohm through-out terminator of the VIDEO A CH and connect the CH2 probe to the 75 ohm through-out terminator of the EXT OUT R terminal.
11. Set the VERT MODE of the oscilloscope to dual mode.
12. Adjust the SET UP level of the CH1 & CH2 waveforms of the oscilloscope exactly.
13. Turn RV4 on the BG Board until the level of the CH2 VIDEO portion is the same as the level of the CH1 VIDEO portion.
Standard: 5 mV (VIDEO level difference).
14. Connect the CH1 probe of the oscilloscope to the 75 ohm through-out terminator of the EXT OUT G terminal (then CH2 is connected to the EXT OUT R terminal).
15. Adjust the SET UP level of the CH1 & CH2 waveforms of the oscilloscope exactly.

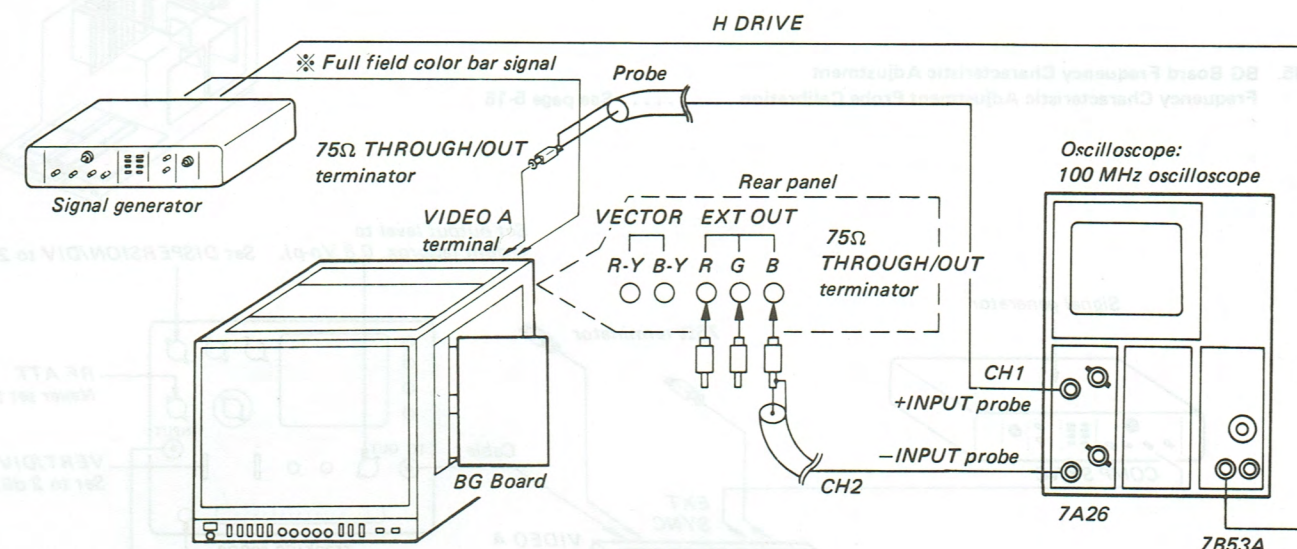
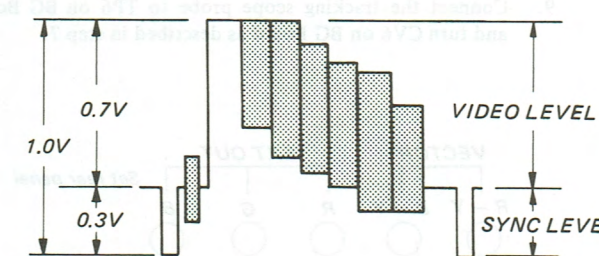


Fig. 34-3.

16. Turn RV8 on the BG Board until the level of the CH1 VIDEO portion is the same as the level of the CH2 VIDEO portion.
Standard: 5 mV (the level difference between the output signal of the VIDEO A CH from the level of the VIDEO portion.)
17. Connect the CH1 probe of the oscilloscope to the 75 ohm through-out terminator of the EXT OUT B terminal.
18. Adjust as in step 15, turn RV12 on the BG Board until the level of the CH1 video portion is the same as the level of the CH2 VIDEO portion.
Standard: 5 mV (same as step 16)

Note: This 5 mV standard does not relate to the EXT OUT R output VIDEO portion, but to the level of the VIDEO portion of the EXT OUT B terminal output for the level of the VIDEO portion of the VIDEO A CH input signal.



Input signal waveform when 75 ohm terminated (level).

Fig. 34-5.

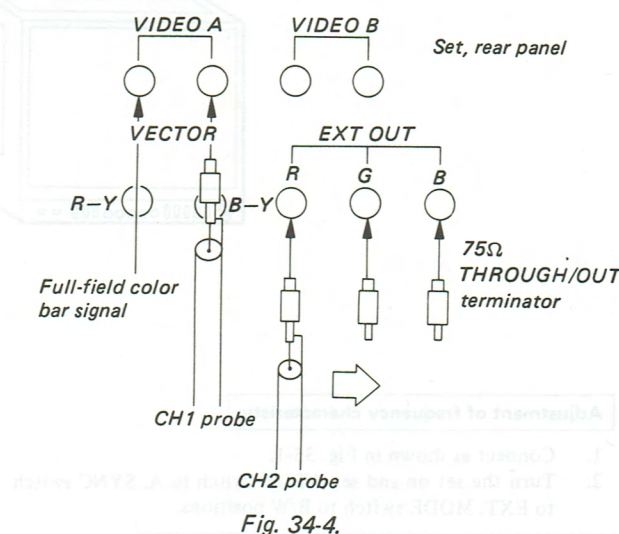
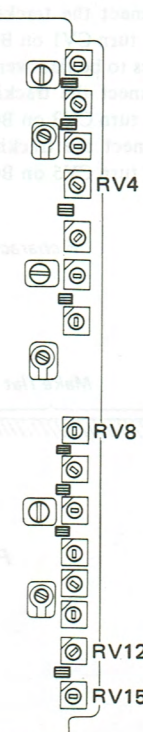


Fig. 34-4.

BG Board



35. BG Board Frequency Characteristic Adjustment
Frequency Characteristic Adjustment Probe Calibration See page 5-16

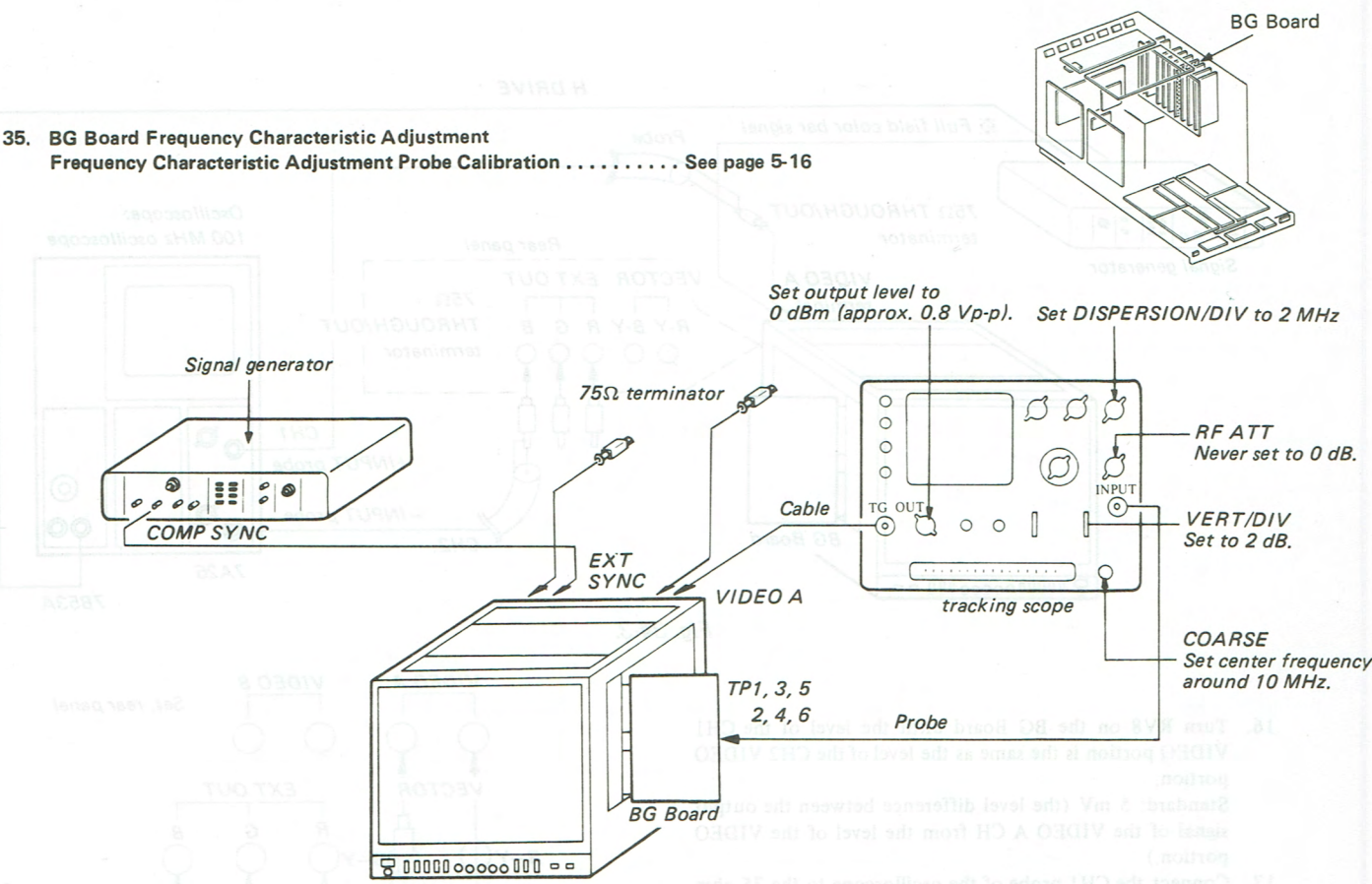


Fig. 35-1.

Adjustment of frequency characteristic

1. Connect as shown in Fig. 35-1.
2. Turn the set on and set INPUT switch to A, SYNC switch to EXT, MODE switch to B/W positions.

Adjustment of RGB ch frequency characteristics

3. Connect the tracking scope probe to TP1 on BG Board and turn CV1 on BG Board to adjust frequency characteristics to be flat over entire range 0 ~ 15 MHz. See Fig. 35-2.
4. Connect the tracking scope probe to TP3 on BG Board and turn CV3 on BG Board as described in step 3.
5. connect the tracking scope probe to TP5 on BG Board and turn CV5 on BG Board as described in step 3.

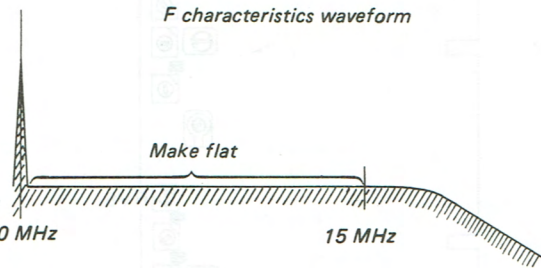


Fig. 35-2.

Adjustment of decoder our RGB frequency characteristics

6. Terminate EXT OUT R, G, B, terminal of the set in 75Ω.
7. Connect the tracking scope probe to TP2 on BG Board and turn CV2 on BG Board to adjust frequency characteristics to be flat over entire range 0 ~ 15 MHz. See Fig. 35-2.
8. Connect the tracking scope probe to TP4 on BG Board and turn CV4 on BG Board as described in step 7.
9. Connect the tracking scope probe to TP6 on BG Board and turn CV6 on BG Board as described in step 7.

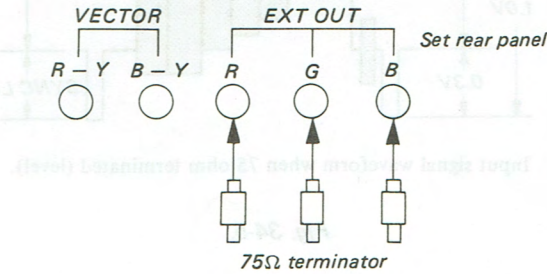
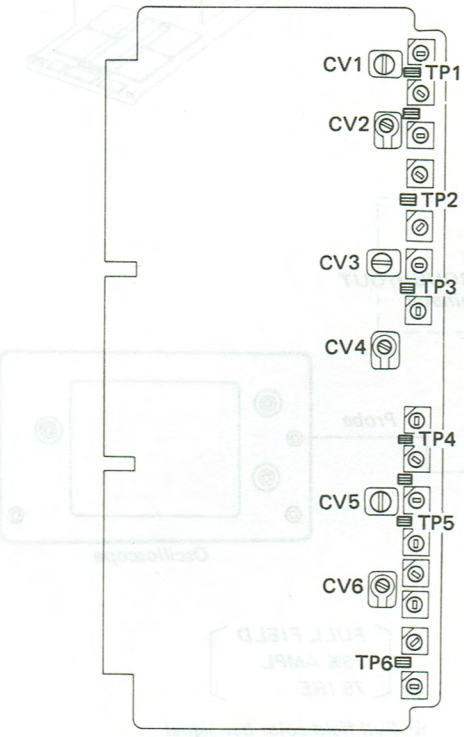


Fig. 35-3.

BG Board



Confirmation of RGB ch frequency characteristics

10. Remove 75Ω terminators from EXT OUT R, G, B, of the set.
11. Connect the tracking scope probe to TP1 on BG Board and confirm that frequency characteristics are the same as described in step 3.
12. Connect the tracking scope probe to TP3 on BG Board and confirm that frequency characteristics are the same as described in step 4.
13. Connect the tracking scope probe to TP5 on BG Board and confirm that frequency characteristics are the same as described in step 5.

36. BH Board Level Adjustment

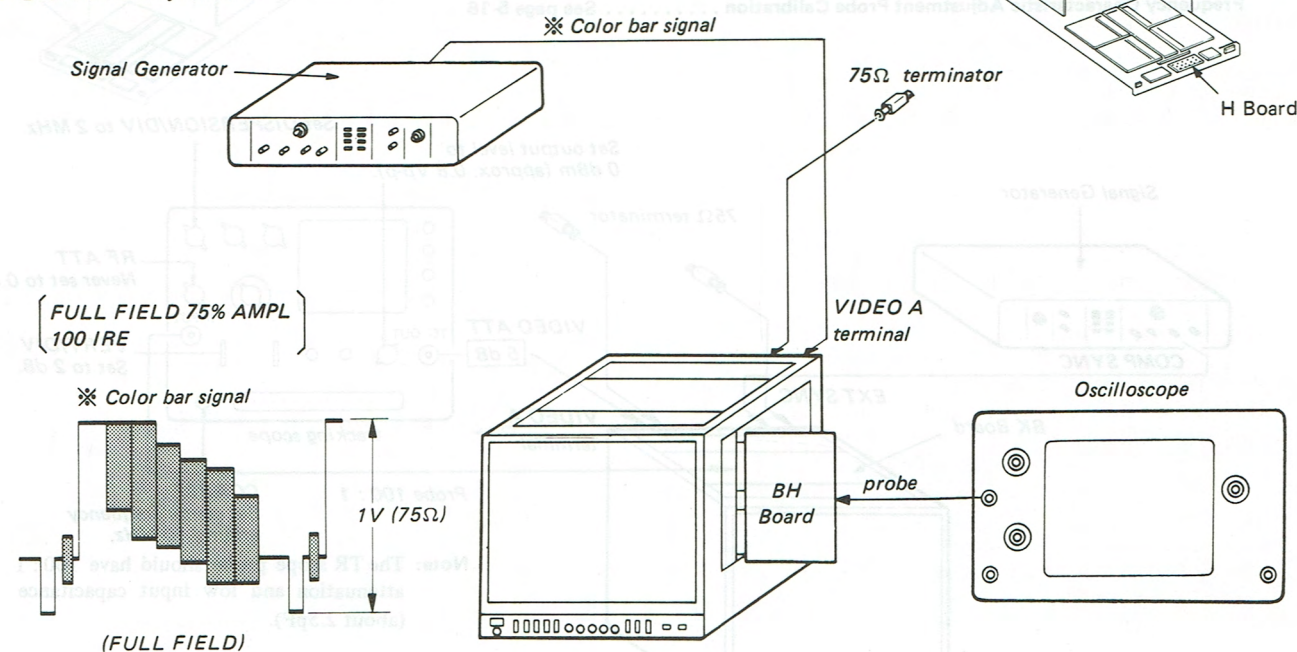


Fig. 36-1.

1. Connect as shown in Fig. 36-1.
2. Turn ON the power for the set, set INPUT switch to A, SYNC switch to INT, MODE switch to AUTO.
3. Set CONTRAST control on the front panel to MIN.
4. Connect the oscilloscope probe to TP5 on BH Board.

Adjustment of CONT MIN LEVEL

5. Set H Board RV8 (SUB CONTRAST VR) inside the drawer to its mechanical center.
6. Set BH Board RV102 to its mechanical center.
7. Turn RV401 on BH Board and adjust so that the difference between the black level and the WHITE REF 100 IRE peak level is 50 mVp-p. See Fig. 36-2.

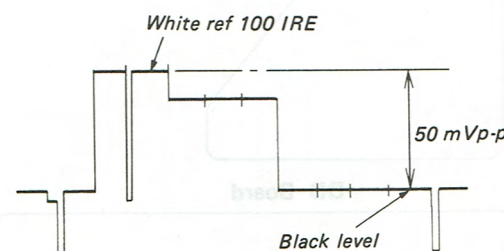


Fig. 36-2. CONT MIN LEVEL ADJ

Adjustment of CONT PRESET LEVEL

8. Set CONTRAST control on the front panel to PRESET position.
9. Turn H Board RV8 and adjust so that the difference between the black level and the white ref 100 IRE peak level is 0.6 Vp-p. See Fig. 36-3.

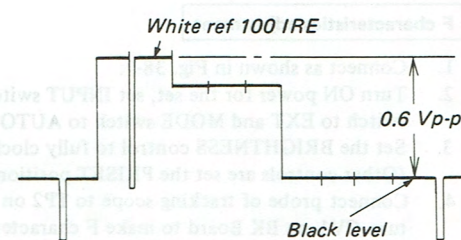


Fig. 36-3. CONT PRESET LEVEL ADJ

BRT pulse level adjustment

10. Confirm that the CONTRAST and BRIGHT CONTROL of the set are in PRESET position.
11. Connect the oscilloscope probe to TP5 on BH Board.
12. In Fig. 36-4, turn H Board RV6 (BRT PRESET VR) inside the drawer so that the BRT pulse level is 0V DC. (oscilloscope to be at max. voltage sensitivity)

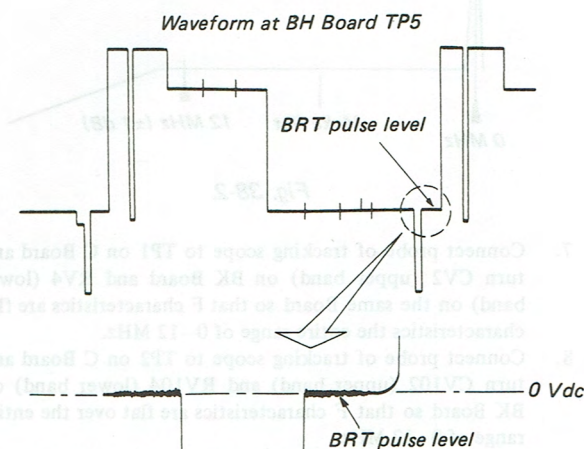


Fig. 36-4.

WHITE PEAK limiter level adjustment

13. Set CONTRAST control to maximum.
14. Connect the oscilloscope probe to TP5 on BH Board.
15. In Fig. 36-5, turn BH Board RV101 so that the difference between the black level and white peak limiter actuating point is 1.0 Vdc.
16. Connect the oscilloscope probe to TP2 on BH Board.
17. Set VERT MODE of oscilloscope to ALT.
18. Turn POSITION knob on oscilloscope to align black level of TP2 waveform with black level of TP5 waveform.
19. Turn VARIABLE knob (CAL IN) on oscilloscope to align signal waveforms of both channels.
20. Turn BH Board RV1 to align the limiter operating point level of CH2 with the limiter operating point level of CH1.
21. Connect the CH2 probe to TP8 on BH Board.
22. Turn POSITION knob on oscilloscope to align black level of CH1 and CH2 signals.
23. Turn VARIABLE knob (CAL IN) on oscilloscope to align signal waveforms for both channels.
24. Turn BH knob RV201 to align limiter operating point level of CH2 with limiter operating point level of CH1.
25. Set VARIABLE knob (CAL IN) back to NORMAL (click position).

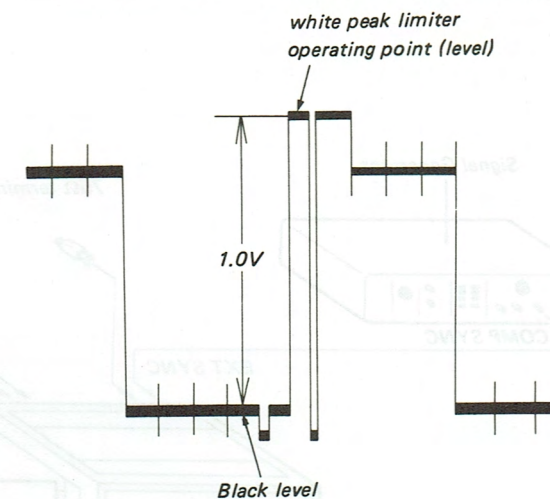
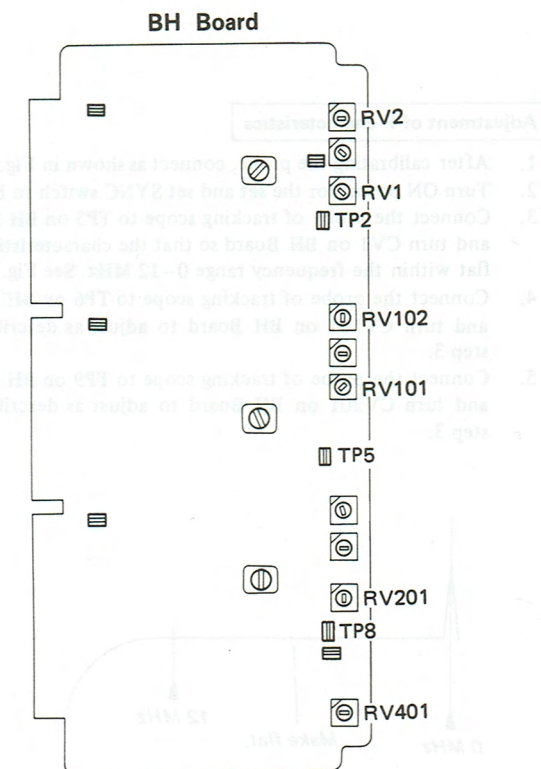
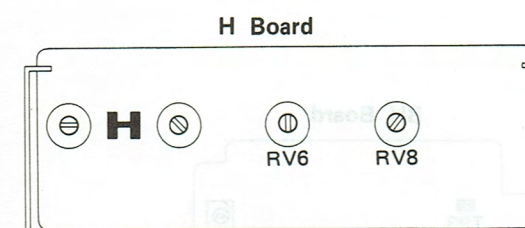


Fig. 36-5.



37. BH Board Frequency Characteristic Adjustment

Frequency Characteristic Adjustment Probe Calibration See page 5-16

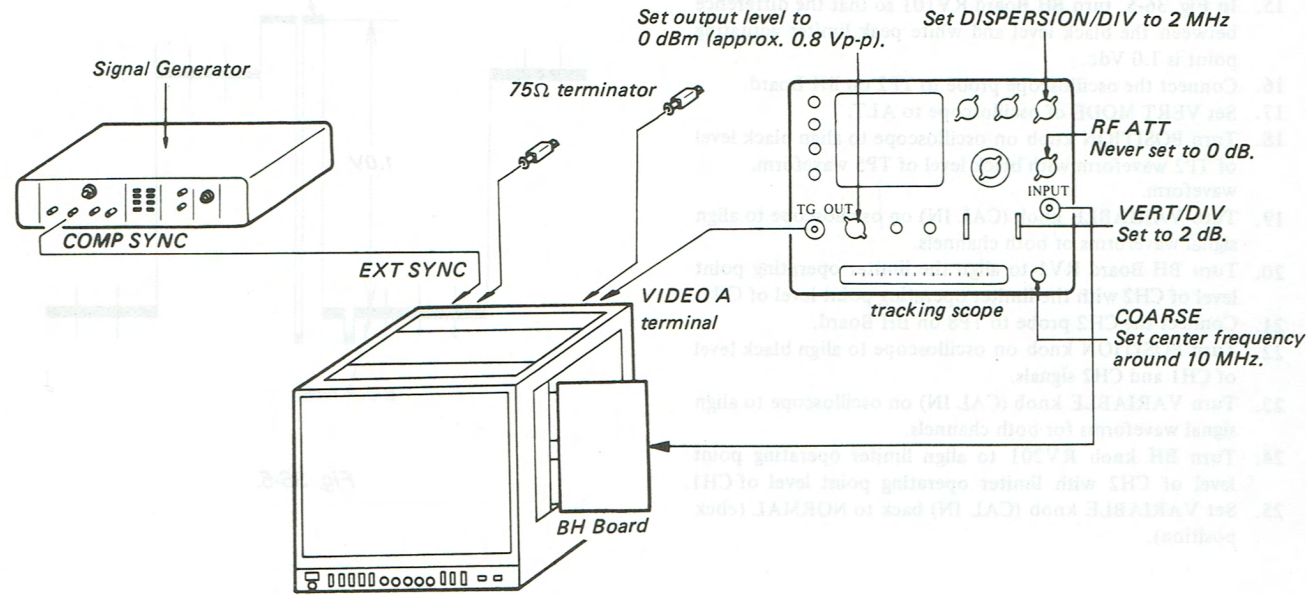


Fig. 37-1.

Adjustment of F characteristics

1. After calibrating the probe, connect as shown in Fig. 37-1.
2. Turn ON power for the set and set SYNC switch to EXT.
3. Connect the probe of tracking scope to TP3 on BH Board and turn CV1 on BH Board so that the characteristics are flat within the frequency range 0–12 MHz. See Fig. 37-2.
4. Connect the probe of tracking scope to TP6 on BH Board and turn CV101 on BH Board to adjust as described in step 3.
5. Connect the probe of tracking scope to TP9 on BH Board and turn CV201 on BH Board to adjust as described in step 3.

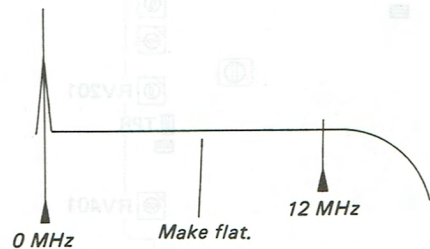
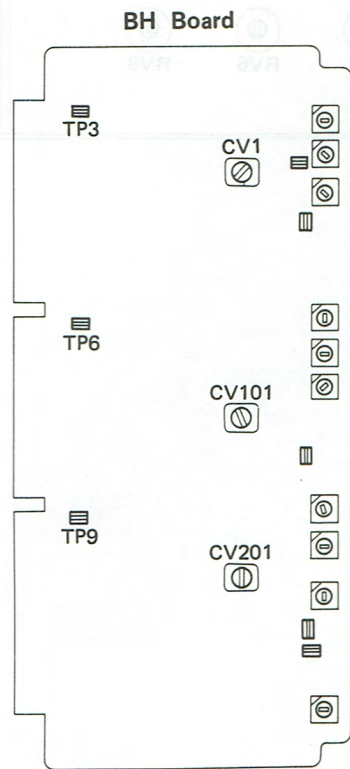


Fig. 37-2.



38. BK Board Frequency Characteristic Adjustment

Frequency Characteristic Adjustment Probe Calibration See page 5-16

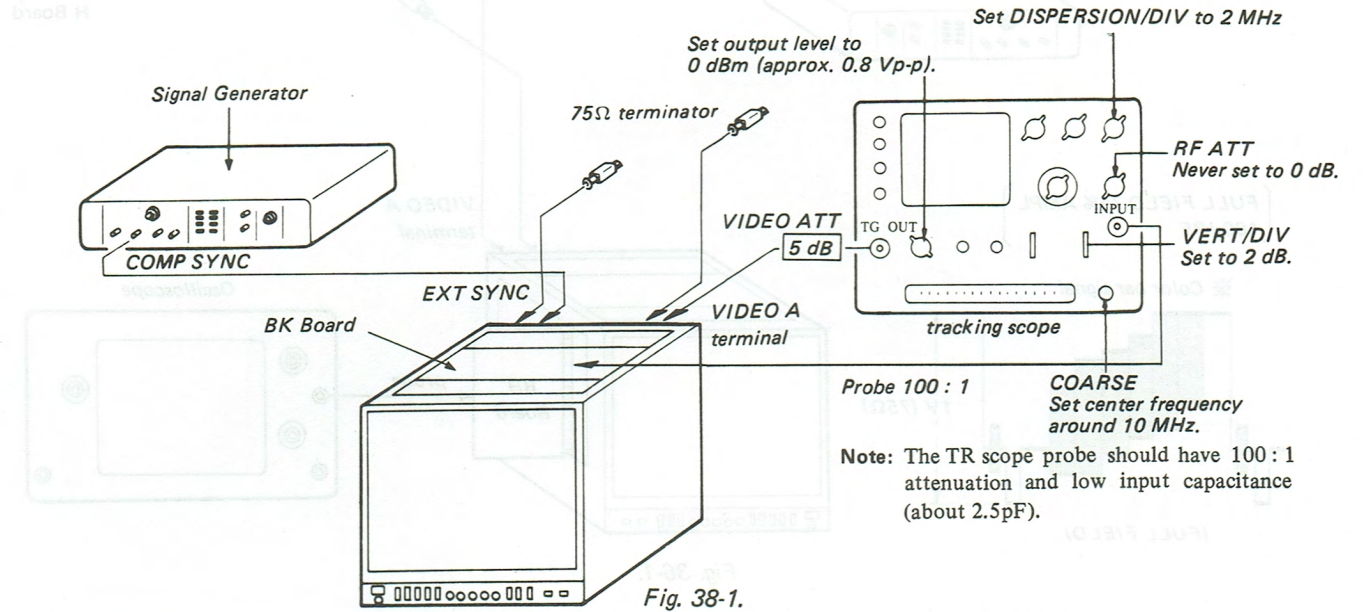


Fig. 38-1.

F characteristics adjustment

1. Connect as shown in Fig. 38-1.
2. Turn ON power for the set, set INPUT switch to A, SYNC switch to EXT and MODE switch to AUTO position.
3. Set the BRIGHTNESS control to fully clockwise position. (Other controls are set the PRISET position)
4. Connect probe of tracking scope to TP2 on BK Board and turn CV1 on BK Board to make F characteristics flat over the entire range of 0–12 MHz. See Fig. 38-2.
5. Connect probe of tracking scope to TP102 on BK Board and turn CV101 on BK Board as described in step 4. (F characteristics flat over entire range of 0–12 MHz.)
6. Connect probe of tracking scope to TP202 on BK Board and turn CV201 on BK Board as described in step 4.

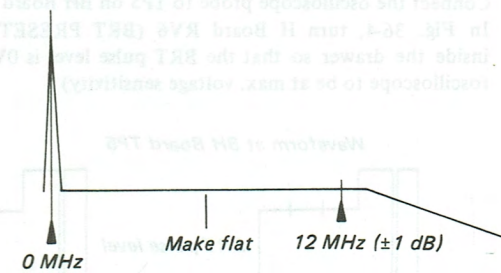
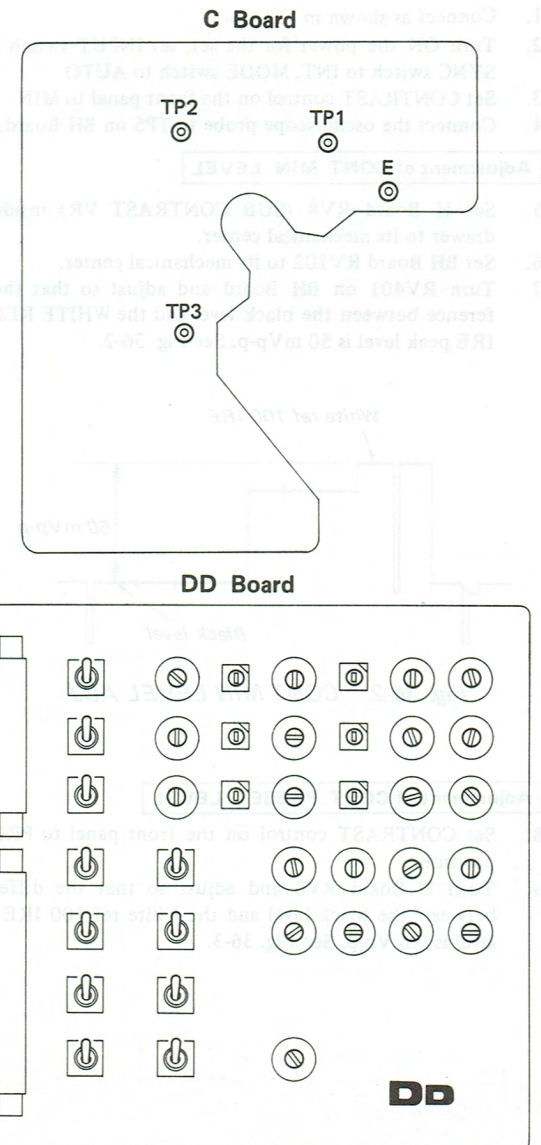
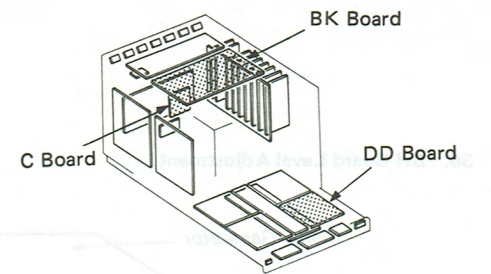
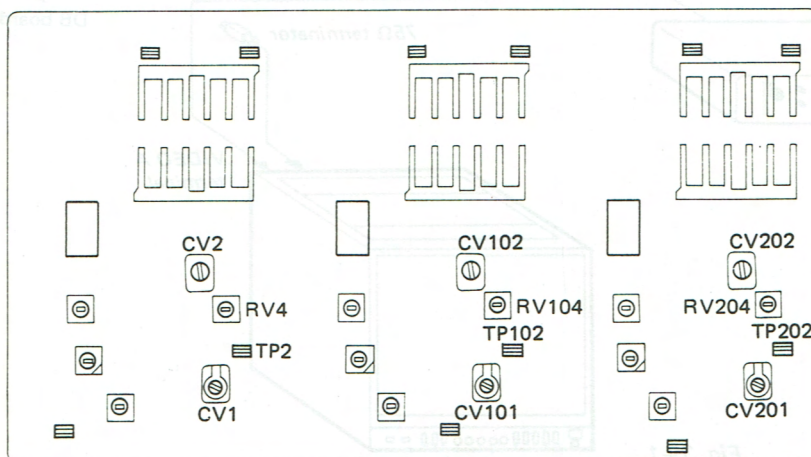


Fig. 38-2.

7. Connect probe of tracking scope to TP1 on C Board and turn CV2 (upper band) on BK Board and RV4 (lower band) on the same Board so that F characteristics are flat characteristics the entire range of 0–12 MHz.
8. Connect probe of tracking scope to TP2 on C Board and turn CV102 (upper band) and RV104 (lower band) on BK Board so that F characteristics are flat over the entire range of 0–12 MHz.
9. Connect the tracking scope probe to TP3 on the C Board and adjust CV202 (upper band) and RV204 (lower band) on BK Board for flat F characteristics between 0–12 MHz.



BK Board



1. Connect as shown in Fig. 39-1, and turn the power switch of the set to ON.

V-Lamp Adjustment

1. Connect the oscilloscope probe to DA circuit board TP2.
2. Turn DA Board RV5 to make V-LAMP waveform 12V-p-p (Fig. 39-2).



Fig. 39-2

EXP. V-Center Adjustment (Use Linearity Gauge)

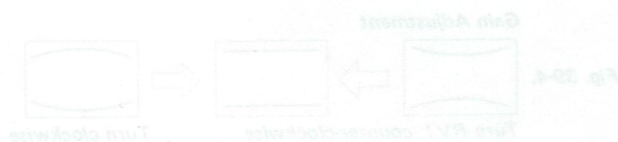
1. Receive cross-hatch signal.
2. Set DA Board RV8 (V-CENTER) to Mechanical Center.
3. Set EXP. MODE (Turn on V-DELAY switch), and adjust the V-center for EXP. MODE by turning DA Board RV1.
4. Return the mode to NORMAL, and adjust the V-center for NORMAL mode by turning DA Board RV5.
5. Carry out tracking by repeating the steps 3 and 4 two or three times.

EXP. H-Size Adjustment

1. Turn S10 and S11 of DB Board to CH (cross-hatch) and receive the incorporated cross-hatch signal.
2. Confirm the H-size for NORMAL mode (Make sure that H is approx. linear).
3. Adjust the H-size for EXP. mode with the H-size for NORMAL mode by DB Board RV13 (EXP. H-SIZE) and DB Board RV9 (EXP. H-PIN).
4. Check H-size during NORMAL mode.
5. Repeat steps 3 and 4 to make tracking until H-size during NORMAL mode is same as that during EXP. mode.

V-Linearity Adjustment

1. Receive convergence pattern signal, and with H-LINE only, set the mode to NORMAL.
2. Turn DB Board RV1 (V. PIN) fully clockwise.
3. Adjust V-pin distortion phase by turning DB Board RV4 (Fig. 39-3).
4. Adjust V-pin distortion gain by turning DB Board RV1 (Fig. 39-4).
5. Adjust V-pin distortion vertical balance by turning DB Board RV5 (Fig. 39-5).
6. Adjust V-pin distorted rhombic compensation by turning DB Board RV6 (Fig. 39-6).
7. Make tracking by repeating steps 3 through 6.



39. DA and DB Board Linearity Adjustment

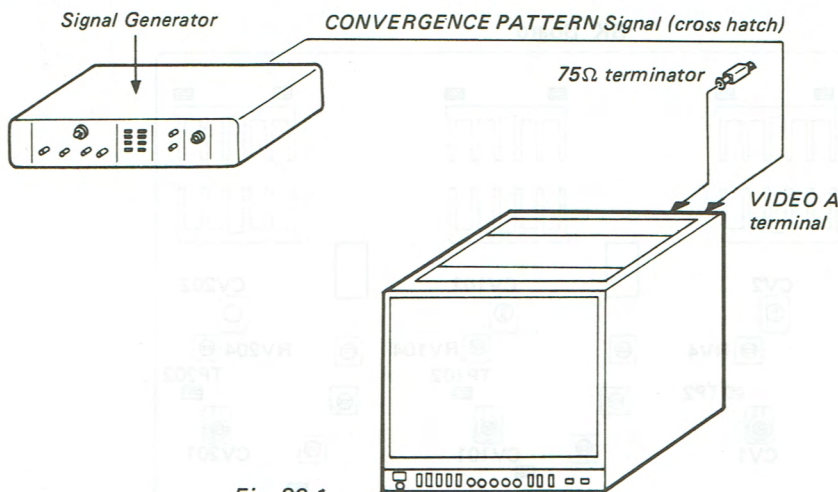
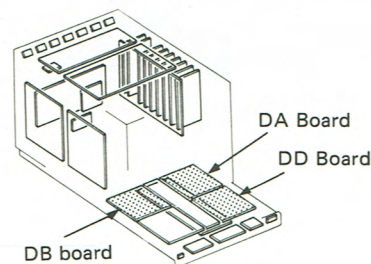


Fig. 39-1.



1. Connect as shown in Fig. 39-1, and turn the power switch of the set to ON.

V Lamp Adjustment

1. Connect the oscilloscope probe to DA circuit board TP2.
2. Turn DA Board RV5 to make V LAMP waveform 12V_{p-p}. (Fig. 39-2)

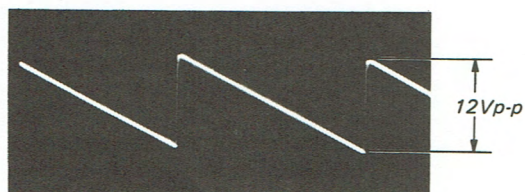


Fig. 39-2.

EXP. V-Center Adjustment (Use Linearity Gauge.)

1. Receive cross-hatch signal.
2. Set DA Board RV8 (V-CENTER) to Mechanical Center.
3. Set EXP. MODE (Turn on V-DELAY switch), and adjust the V-center for EXP. MODE by turning DA Board RV7.
4. Return the mode to NORMAL, and adjust the V-center for NORMAL MODE by turning DA Board RV8.
5. Carry out tracking by repeating the steps 3 and 4 two or three times.

EXP. H-Size Adjustment

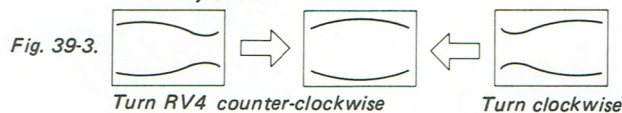
1. Turn S10 and S11 of DD Board to CH (cross-hatch) and receive the incorporated cross-hatch signal.
2. Confirm the H-size for NORMAL mode. (Make sure that it is approx. linear.)
3. Adjust the H-size for EXP. mode with the H-size for NORMAL mode by DB Board RV13 (EXP. H-SIZE) and DB Board RV9 (EXP. H PIN).
4. Check H-size during NORMAL mode.
5. Repeat steps 3 and 4 to make tracking until H-size during NORMAL mode is same as that during EXP. mode.

V-Linearity Adjustment

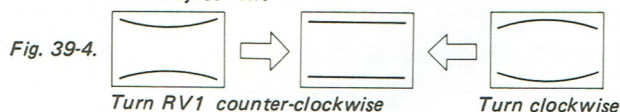
1. V-pin distortion adjustment

- 1) Receive convergence pattern signal, and with H-LINE only, set the mode to NORMAL.
- 2) Turn DB Board RV1 (V. PIN) fully clockwise.
- 3) Adjust V-pin distortion phase by turning DB Board RV4. (Fig. 39-3)
- 4) Adjust V-pin distortion gain by turning DB Board RV1. (Fig. 39-4)
- 5) Adjust V-pin distortion vertical balance by turning DB Board RV5. (Fig. 39-5)
- 6) Adjust V-pin distortion rhombic compensation by turning DB Board RV6. (Fig. 39-6)
- 7) Make tracking by repeating steps 2 through 6.

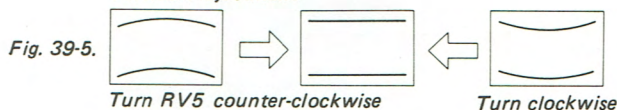
Phase Adjustment



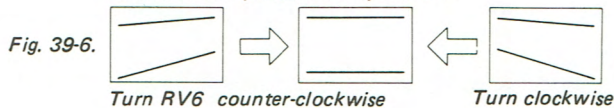
Gain Adjustment



Vertical Adjustment

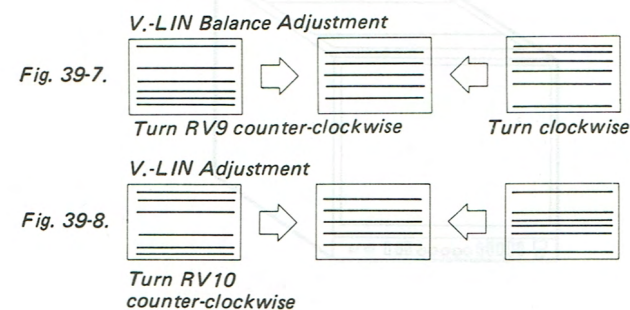


Rhombic Compensation Adjustment



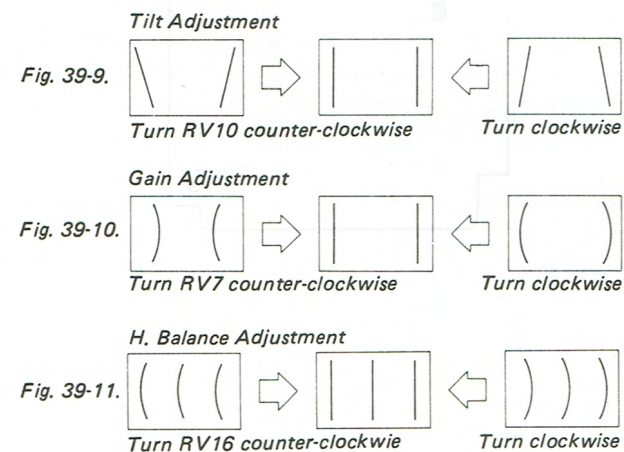
2. Linearity adjustment

- 1) Receive convergence pattern signal, and with H. LINE only, turn the mode to NORMAL.
- 2) Adjust V-CENTER by turning DA Board RV8.
- 3) Adjust V.LIN BALANCE by turning DA Board RV9. (Fig. 39-7)
- 4) Adjust V.LIN by turning DA Board RV10. (Fig. 39-8)
- 5) Adjust V.SIZE by turning DA Board RV12.
- 6) Make tracking by repeating steps 2 through 5.



H-Linearity Adjustment

1. Receive convergence pattern signal, and with V-LINE only, turn the mode to NORMAL.
2. Adjust H. SIZE by turning DB Board RV11.
3. Adjust H PIN DIST. TILT by turning RV10. (Fig. 39-9)
4. Adjust H. PIN DIST. GAIN by turning RV7. (Fig. 39-10)
5. Adjust H. PIN DIST. H. BALANCE by turning RV16. (Fig. 39-11)
6. Receive monoscope signal, and adjust H. CENTER by turning DB Board RV15 (H. CENT).
7. Receive convergence pattern signal, and adjust the left side of the picture by turning DB Board RV11 (H. SIZE).
8. Adjust the right side of the picture by turning DB Board RV14 (H. LIN).
9. Make tracking by repeating steps 3 through 8.



Under Scan Linearity Adjustment

1. Receive convergence pattern signal, and turn the mode to UNDER SCAN.
2. Adjust V. SIZE in UNDER SCAN MODE by turning DA Board RV6 (V. LAMP).
3. Adjust V. PIN by turning DB Board RV2.
4. Adjust V. LIN by turning DA Board RV11.
5. Make tracking by repeating steps 2 through 4.
6. Adjust H. PIN by turning DB Board RV8.
7. Adjust H. SIZE by turning DB Board RV12.

EXP. Linearity Adjustment

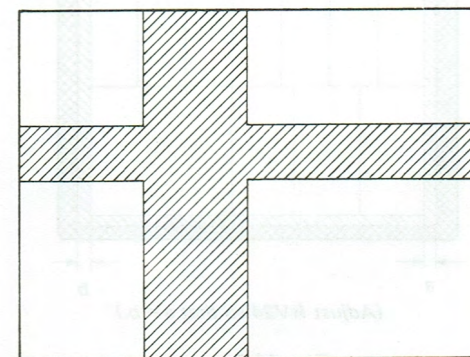
1. Turn S10 and S11 of DD Board to CH (CROSS-HATCH) and receive internal cross-hatch signal, and turn the mode to EXP.
2. Adjust V. PIN by turning DB Board RV3.
3. Adjust H. PIN by turning DB Board RV9.
4. Check H. SIZE by turning DB Board RV13.
5. Check H. LIN of NORMAL SCAN.

AFC Phase Adjustment

1. Receive monoscope signal.
2. Turn DA Board AFC Switch (S1) to AFC SLOW, and after more than 10 seconds, turn DA Board RV4 to adjust the H. center during SLOW to the H. center during FAST.
3. Ensure that H. center does not change when AFC Switch is changed over from FAST ↔ SLOW.

H. FREQ. Adjustment

1. Receive cross-hatch signal, and turn SYNC Switch to EXT. (The picture drifts.)
2. Adjust until the picture stops drifting or moves slowly by turning DA Board RV3. (Fig. 39-12)



- Adjust so that the picture either stops drifting or moves slowly.

Fig. 39-12.

H. SYNC Pulse Adjustment

1. Receive cross-hatch-signal.
2. Connect the oscilloscope probe to DA Board TP1, and adjust H. SYNC pulse width to $5 \mu s$ by DA Board RV2. (Fig. 39-13) (Earth to be connected to TP3.)

- Waveform of DA Board TP5.

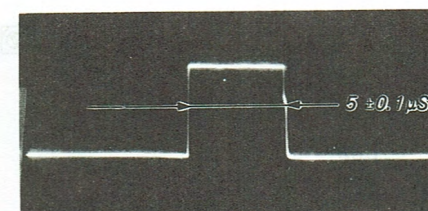
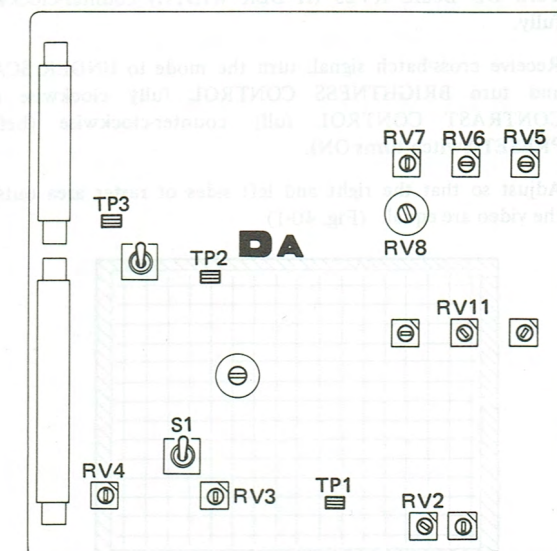
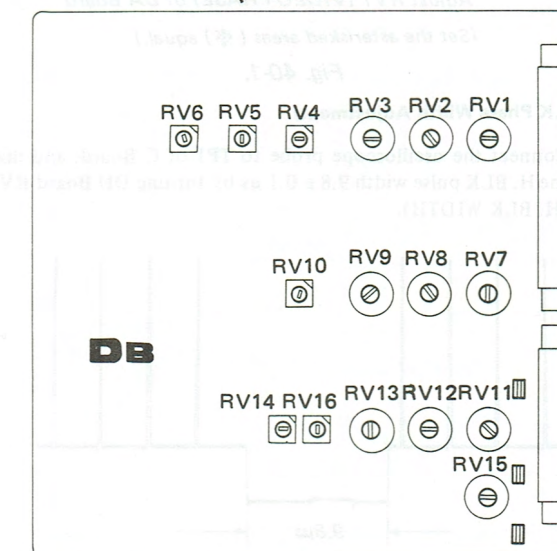


Fig. 39-13.

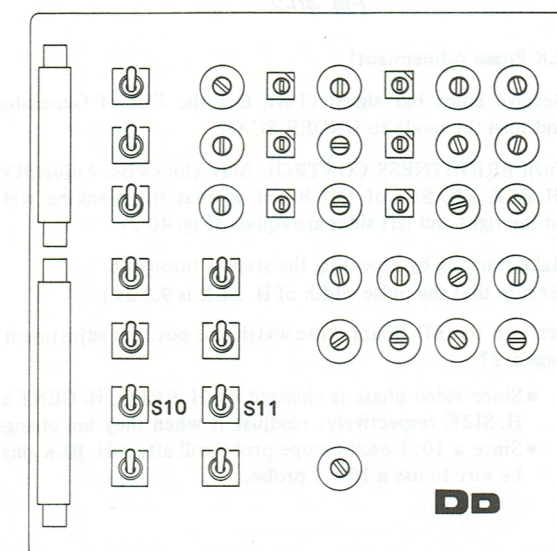
DA Board



DB Board

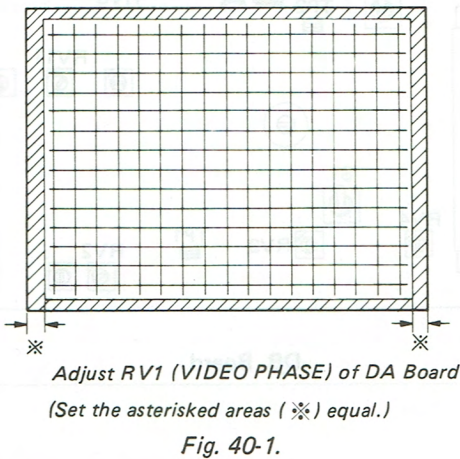


DD Board



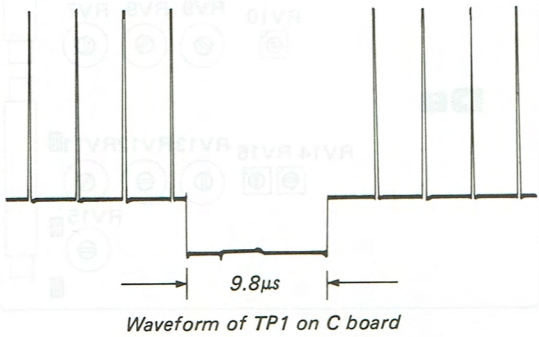
40. DA and DD Video Phase Adjustment

1. Turn DD Board RV25 (H BLK WIDTH) counter-clockwise fully.
2. Receive cross-hatch signal, turn the mode to UNDER SCAN, and turn BRIGHTNESS CONTROL fully clockwise and CONTRAST CONTROL fully counter-clockwise (before PRESET Switch turns ON).
3. Adjust so that the right and left sides of raster area outside the video are equal. (Fig. 40-1)



(H. BLK Phase Width Adjustment)

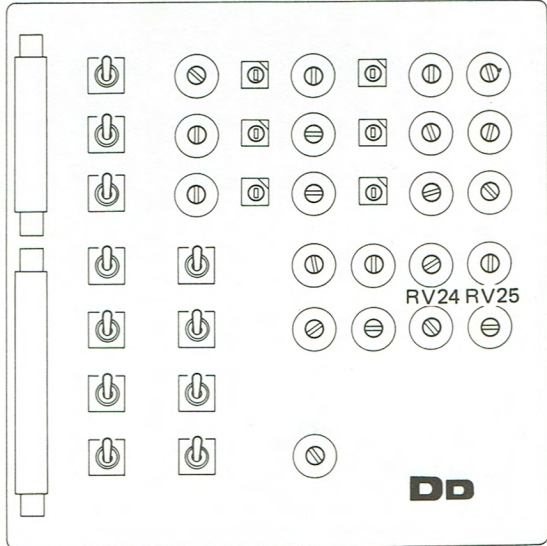
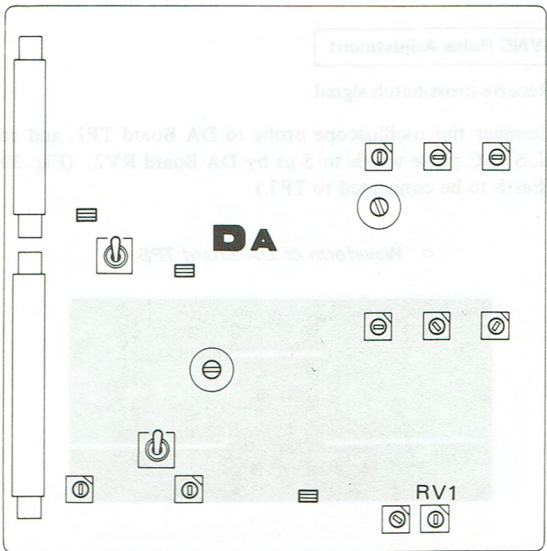
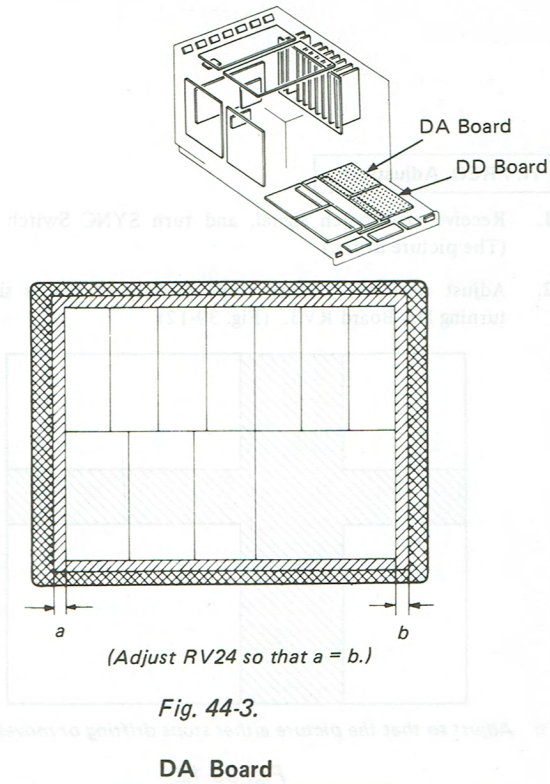
4. Connect the oscilloscope probe to TP1 of C Board, and make the H. BLK pulse width $9.8 \pm 0.1 \mu s$ by turning DD Board RV25 (H. BLK WIDTH).



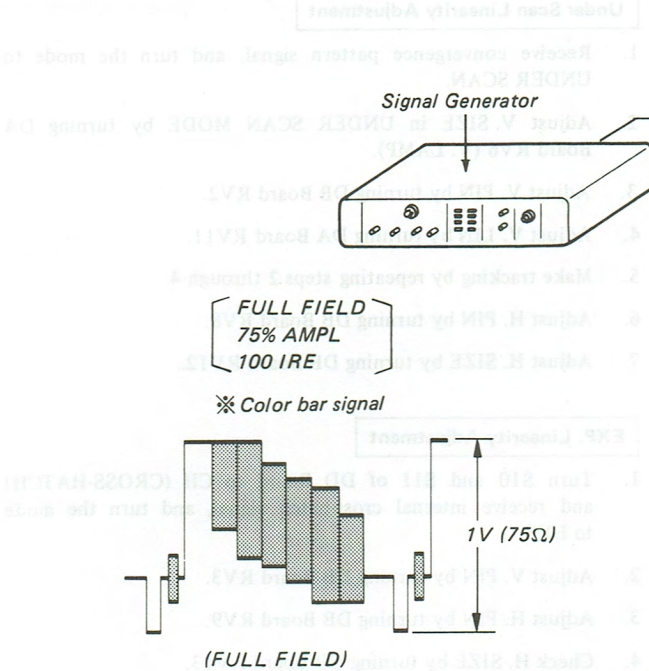
(H. BLK Phase Adjustment)

5. Receive color bar signal (Turn ON the EIA of Generator.), and turn the mode to UNDER SCAN.
6. Turn BRIGHTNESS CONTROL fully clockwise. Adjust RV24 (H. BLK PHASE) of DD Board so that the blanking widths on the right and left sides are equal. (Fig. 40-3)
7. Make tracking by repeating the steps 4 through 6. (Ensure that the pulse width of H. BLK is $9.8 \mu s$.)
8. Perform the BD Board pulse width and position adjustment on page 5-27.

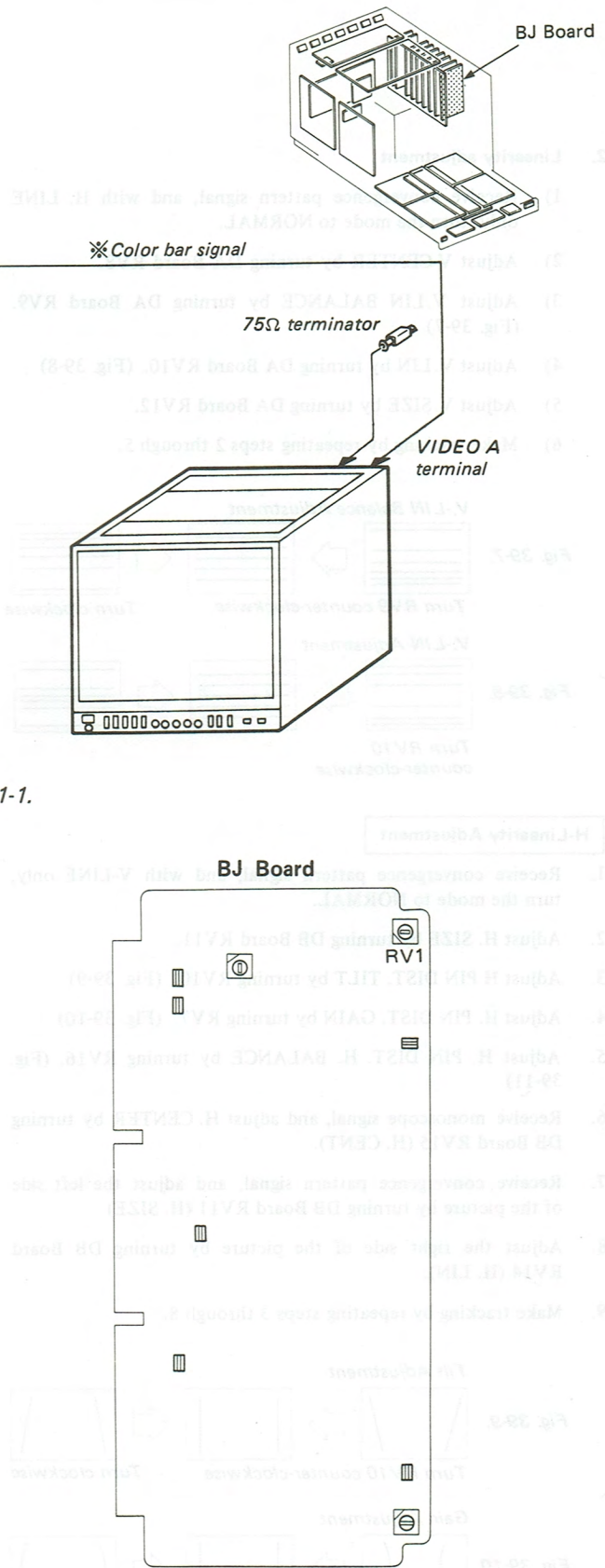
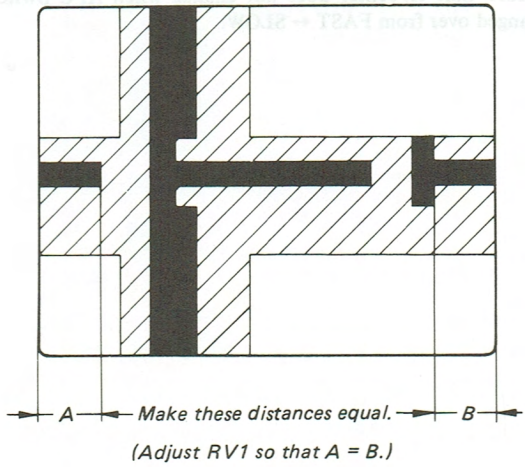
Notes: ● Since video phase is changed by H. FREQ, H. CENT and H. SIZE respectively, readjust it when they are changed.
● Since a 10:1 oscilloscope probe will affect H. BLK phase, be sure to use a 100:1 probe.



41. BJ Board H Delay Position Adjustment



1. Connect as shown in Fig. 41-1.
2. Turn ON the power switch of the set, and turn the INPUT Switch to A and SYNC switch to INT.
3. Actuate H-DELAY and V-DELAY, and adjust the H-DELAY position as shown in Fig. 41-2 by turning BJ Board RV1.



42. BI Board Interval Cross-hatch Position Adjustment

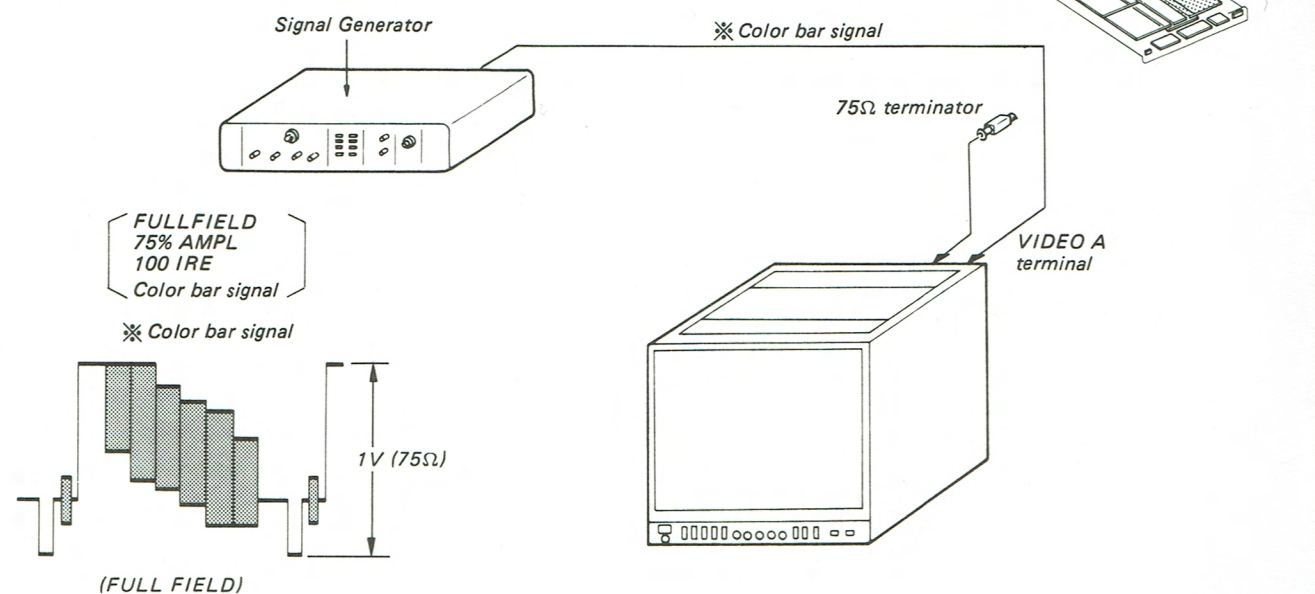


Fig. 42-1.

1. Connect as shown in Fig. 42-1.
2. Turn ON the Power Switch of the set, turn INPUT switch to A, SYNC switch to INT, turn MODE switch to AUTO, and turn S10 (FUNCTION) and S11 on DD Board to the interval Cross-hatch side.
3. Turn the Mode Switch to UNDER SCAN.
4. Turn L1 on BI Board to make the number of horizontal lines 16. Then, by turning L1, set it to a point where the 16th line disappears.
5. Turn the Mode Switch to NORMAL SCAN.
6. Adjust with RV9 and L1 on BI Board so that the ratio of 12 horizontal divisions and the 9 vertical divisions in approximately 4:3 and adjust for horizontal symmetry. (Fig. 42-2)
7. Turn the Mode Switch to UNDER SCAN and adjust so that the 16th horizontal line on the right end disappears.

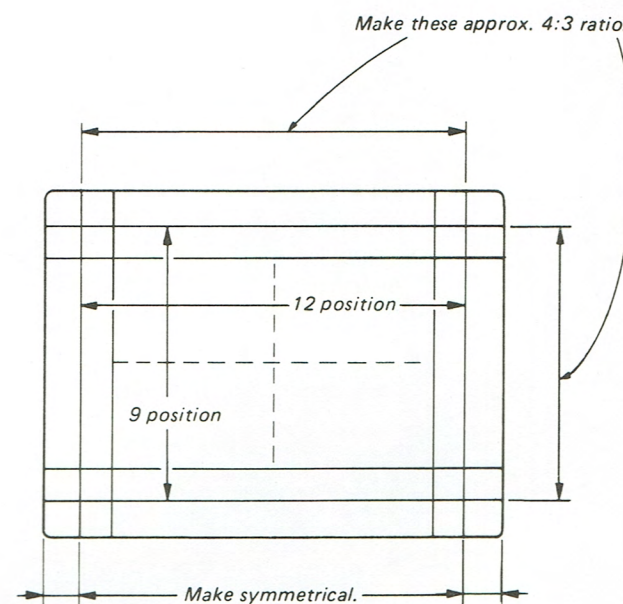
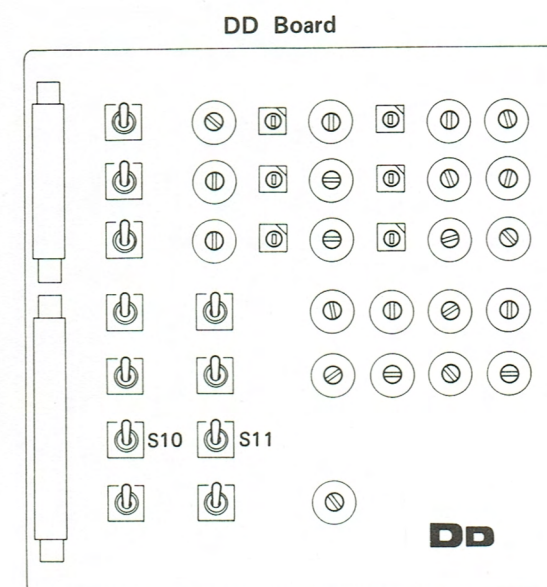
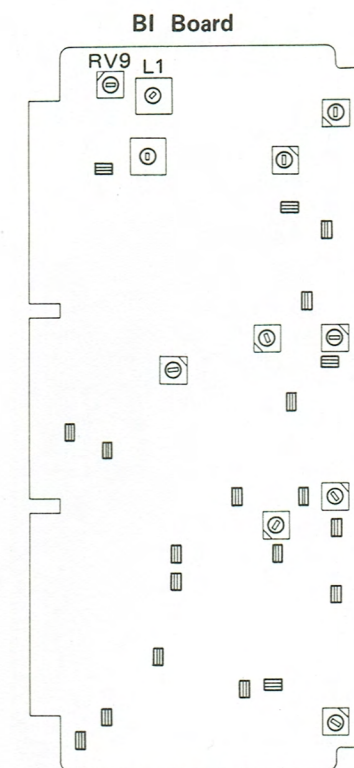
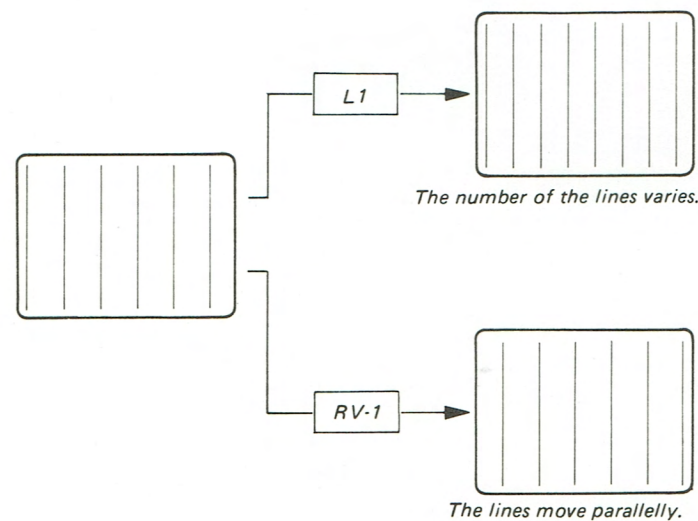
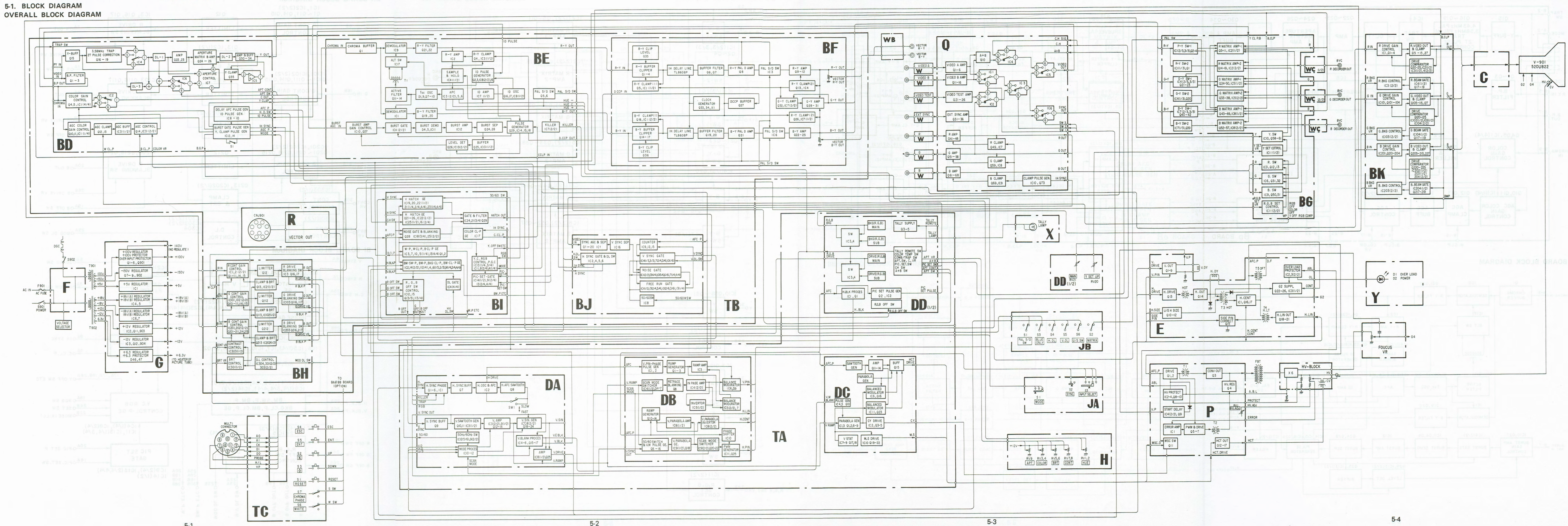


Fig. 42-2.



5-1. BLOCK DIAGRAM

OVERALL BLOCK DIAGRAM



The diagram illustrates the video processing section of a color television receiver. It shows the flow of signals from various inputs to the final output signals.

Inputs:

- TRAP SW (B-2)
- MODE (A-2)
- VIDEO IN (B-3, B-5)
- P.Y. IN (B-5)
- B.P. OUT (B-7)
- CHROMA IN (B-9)

Processing Blocks:

- Q15, Q16~Q19, IC4:** 4.43 MHz PAL 3.58 MHz PAL-M TRAP 2T PULSE CORRECTION
- Q1~Q3, B.P. FILTER:** B.P. FILTER
- DL-1, AMP, Q22~Q23:** DL-1, AMP
- Q24~Q26, APERTURE MATRIX & AMP:** APERTURE MATRIX & AMP
- DL-2, Q30~Q34, AMP & BUFF:** DL-2, AMP & BUFF
- Q35, IC5:** Y CLAMP
- Q4, Q5, IC1(4/4):** COLOR GAIN CONTROL
- IC2:** SCREENING & KILLER SW
- Q10, Q11, IC1(1/4):** AGC COLOR GAIN CONTROL
- Q12, Q13:** AGC CLAMP
- IC3(1/2):** AGC BUFF
- Q14, IC3(2/2):** AGC CONTROL
- IC6:** APERTURE SW
- IC7:** APERTURE CONTROL
- IC8~IC10:** DELAY AFC PULSE GEN, ID PULSE GEN
- BURST GATE PULSE GEN, Y CLAMP PULSE GEN:** BURST GATE PULSE GEN, Y CLAMP PULSE GEN

Outputs:

- Y. OUT (B-30)
- APT VR (A-1)
- APT SW (B-1)
- OC-OUT (B-16)
- YCL (B-23)
- AFC P (B-27)
- H.D SW (B-28)
- I.D.P (A-28)
- I.H (B-24)
- SYNCP (B-20)
- AGCP (B-26)
- MODE (B-26)

Control Signals:

- W.C.L.P (B-19)
- B.C.L.P (B-18)
- COLOR (B-17)
- B.G.P (B-25)
- I.B.G.P (B-22)

Other Labels:

- Bd BOARD
- S1

The diagram illustrates the R-Y signal processing section of a color television receiver. It shows the flow of R-Y signals from input to output, including demodulation, filtering, amplification, and control logic. Key components include Chroma Buffer (Q1), Demodulator (IC9), R-Y Filter (Q21, Q22), R-Y Amp (IC2), R-Y Clamp (Q4), Sample & Hold (IC4), ID Pulse Generator (Q2, Q3), ID Amp (IC7), ID Osc (Q16), PAL S/D SW (Q5, Q6), Burst Amp Gain Control (IC10), Burst Gate (IC4), Burst Demo (IC11), Burst Amp (IC12), Burst Sep (Q24), Pulse Generator (IC14, IC15, IC18, Q29), Killer (IC17), Level Det (Q26), and Buffer (Q25). The diagram also shows various control signals like A-20, A-21, B-28, B-30, B-19, A-19, B-19, B-27, and A-20.

The diagram illustrates the R-Y and B-Y channels of a color television receiver. It shows two parallel processing paths for R-Y and B-Y signals. The R-Y path starts with an R-Y IN signal (A-24) entering an R-Y BUFFER CLIPPER (Q1~Q4). This is followed by an IH DELAY LINE (TL8608P), a BUFFER FILTER (Q6,Q7), an R-Y PAL D AMP (Q8), and a PAL S/D SW (IC3). The B-Y path starts with a B-Y IN signal (A-21) entering a B-Y BUFFER CLIPPER (Q14~Q17), followed by an IH DELAY LINE (TL8608P), a BUFFER FILTER (Q19,Q20), a B-Y PAL D AMP (Q21), and a PAL S/D SW (IC6). Both paths then lead to R-Y and B-Y AMPs (Q9~Q12 and Q22~Q25). The diagram also includes various clamp and level control blocks (Q35, Q36, Q33,Q34, Q27, Q32,Q33,Q34, Q26,Q27,Q28~Q31), a CLOCK GENERATOR, and a DCCP BUFFER. External connections include A-2 PAL S/D SW, A-3 R-Y OUT, B-16 VECTOR R-Y OUT, A-9 G-Y OUT, A-19 B-Y OUT, A-17 VECTOR B-Y OUT, and A-5 DCCP IN.

The diagram illustrates the video decoder section of a color television receiver. It shows the signal flow from the PAL SW (5B) through various ICs and switches to the output of the BNC DECODER OUT. The inputs include R-Y (1B), G-Y (9B), B-Y (21B), Y (30B), Y SET VRC (29B), R (3A), G (9A), B (23A), and R, G, B SET VRC (28B). The outputs are 1A (R), 16A (R), 7A (G), 18A (G), 21A (B), and 28A (B).

The components and their connections are as follows:

- IC1 (2/3, 3/3) Q2~Q4**: Receives R-Y (1B) and G-Y (9B) signals. Its outputs are connected to **R-Y SW-1** and **R-Y SW-2**.
- IC1 (1/3), Q1**: Receives R-Y (1B) and G-Y (9B) signals. Its output is connected to **R-Y SW-1** and **R-Y SW-2**.
- IC4 (2/3, 3/3) Q21~Q23**: Receives G-Y (9B) and B-Y (21B) signals. Its outputs are connected to **G-Y SW-1** and **G-Y SW-2**.
- IC4 (1/3), Q20**: Receives G-Y (9B) and B-Y (21B) signals. Its output is connected to **G-Y SW-1** and **G-Y SW-2**.
- IC7 (2/3, 3/3) Q40~Q42**: Receives B-Y (21B) and Y (30B) signals. Its outputs are connected to **B-Y SW-1** and **B-Y SW-2**.
- IC7 (1/3), Q39**: Receives B-Y (21B) and Y (30B) signals. Its output is connected to **B-Y SW-1** and **B-Y SW-2**.
- IC10, Q58~Q61**: Receives Y (30B) and Y SET VRC (29B) signals. Its output is connected to **Y SW**.
- IC11 (1/2)**: Receives Y SET VRC (29B) and Y (30B) signals. Its output is connected to **Y SET CONTROL**.
- IC3, Q12, Q13**: Receives R (3A) and Y (30B) signals. Its output is connected to **R SW**.
- IC6, Q31, Q32**: Receives G (9A) and Y (30B) signals. Its output is connected to **G SW**.
- IC9, Q50, Q51**: Receives B (23A) and Y (30B) signals. Its output is connected to **B SW**.
- IC11 (2/2)**: Receives R, G, B SET VRC (28B) and Y (30B) signals. Its output is connected to **R, G, B SET CONTROL**.
- R MATRIX AMP-1**: Receives R (3A) and Y (30B) signals. Its output is connected to **1A (R)**.
- R MATRIX AMP-2**: Receives R (3A) and Y (30B) signals. Its output is connected to **16A (R)**.
- G MATRIX AMP-1**: Receives G (9A) and Y (30B) signals. Its output is connected to **7A (G)**.
- G MATRIX AMP-2**: Receives G (9A) and Y (30B) signals. Its output is connected to **18A (G)**.
- B MATRIX AMP-1**: Receives B (23A) and Y (30B) signals. Its output is connected to **21A (B)**.
- B MATRIX AMP-2**: Receives B (23A) and Y (30B) signals. Its output is connected to **28A (B)**.

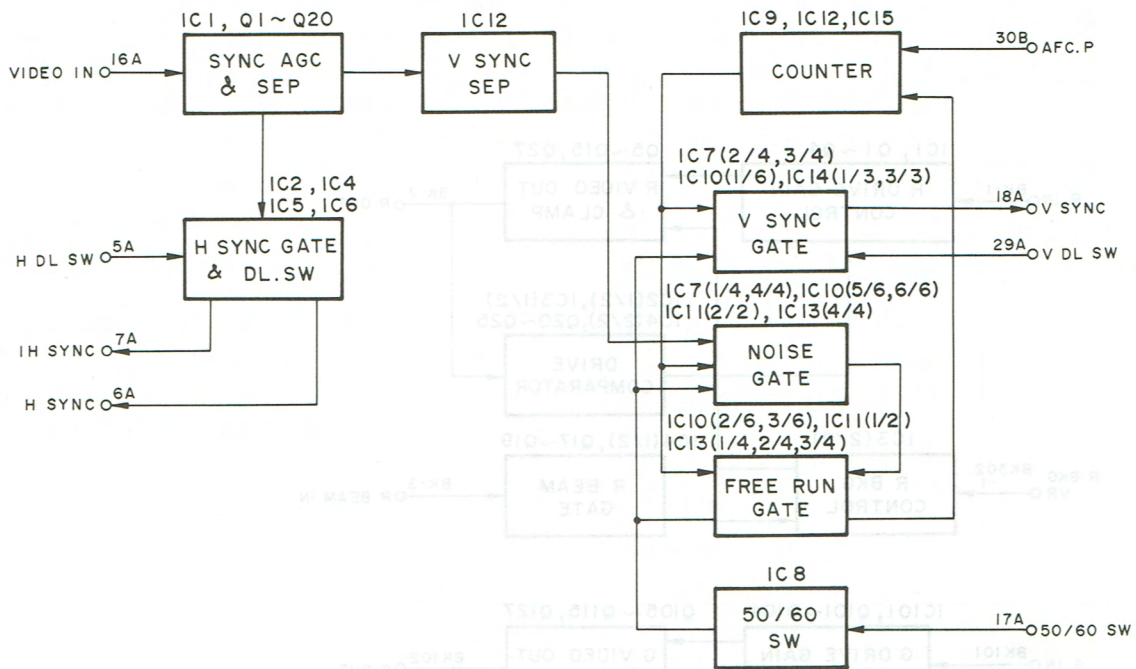
BI BOARD BLOCK DIAGRAM

The diagram illustrates the internal components and signal flow of the BI Board. Key blocks include:

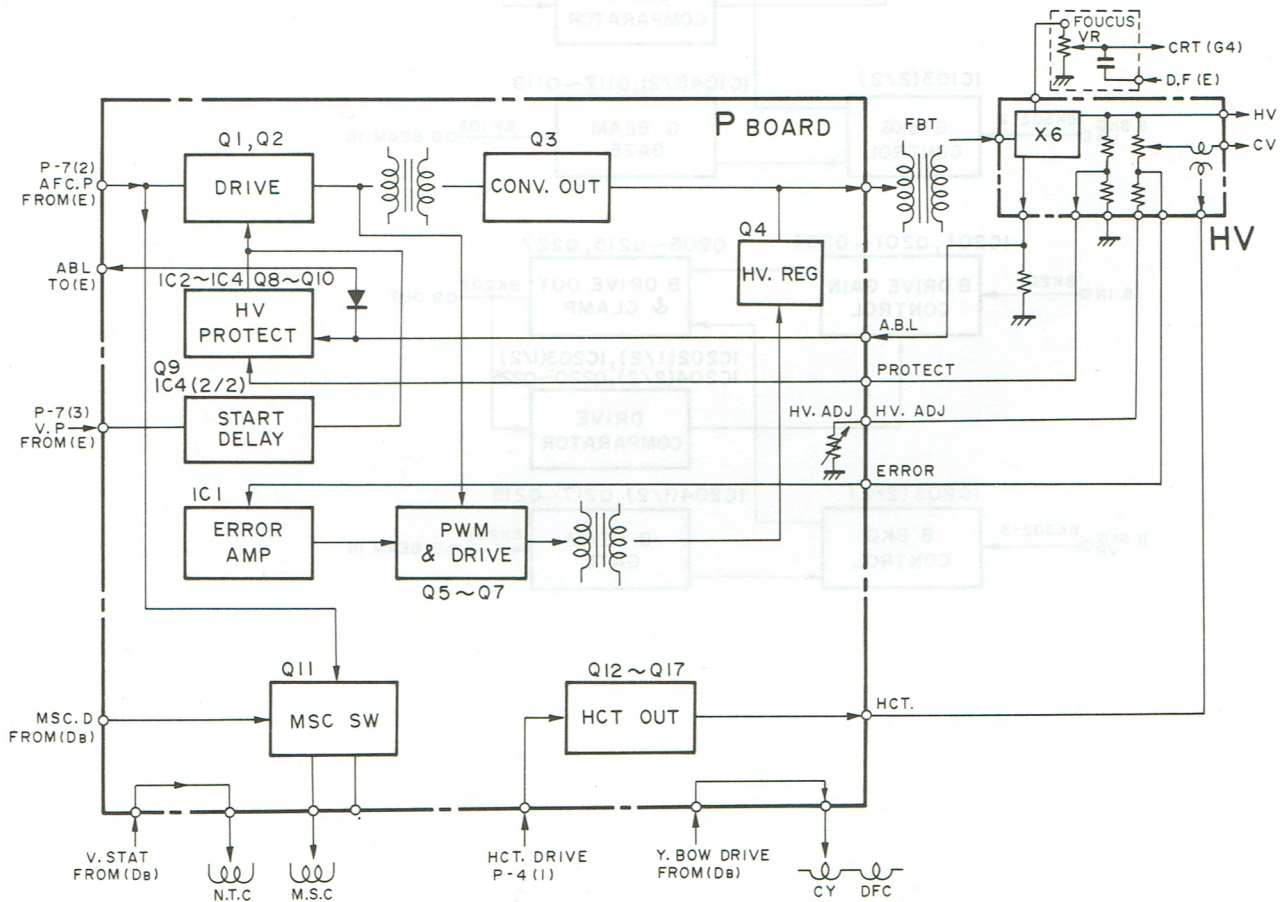
- Control Gain Controls:** R CONT GAIN CONTROL, G CONT GAIN CONTROL, B CONT GAIN CONTROL, and a general CONT CONTROL block.
- Clamping and Limiting:** CLAMP & BRT blocks and LIMITER blocks for each color channel.
- Drive and Blanking:** R DRIVE BLANKING SW, G DRIVE BLANKING SW, and B DRIVE BLANKING SW.
- Hatch and Gate Processing:** H HATCH GE, V HATCH GE, and a GATE & FILTER block.
- Noise and Blanking:** NOISE GATE & BLANKING block.
- Processing and Control:** W.P.W.CL.P.B.CL.P, GE; BM.SW.P, BM.P, BKG.CL.P, BM.CL.P, GE; R,G,B OFF SW CONTROL; DL GATE; COLOR CL.P GE; Y.C RGB CONTROL.P GE; and PIC SET GATE.

Inputs and outputs are labeled with their respective pin numbers and signal names, such as R INO, G INO, B INO, H SYNC, V SYNC, and various OFF SW and OUT signals.

BJ BOARD BLOCK DIAGRAM

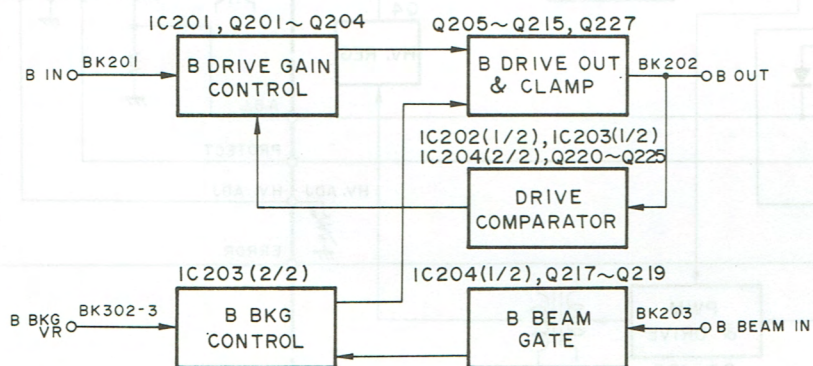
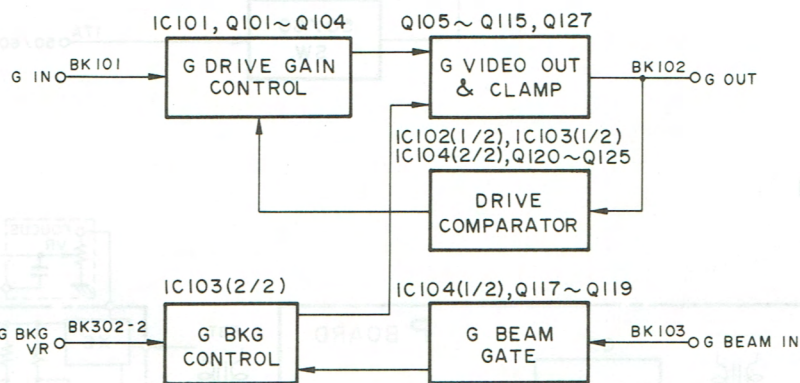
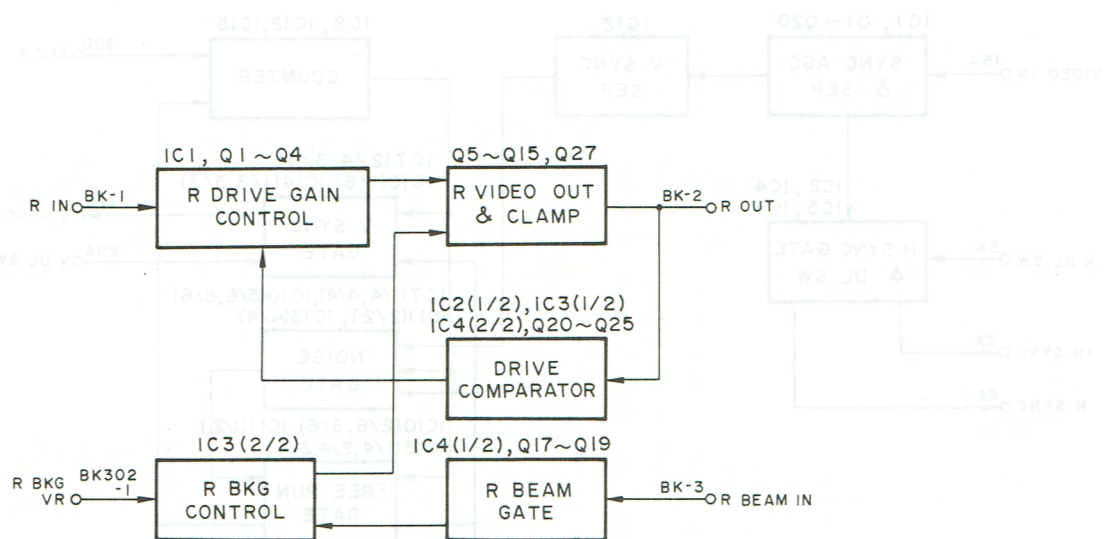


P BOARD BLOCK DIAGRAM

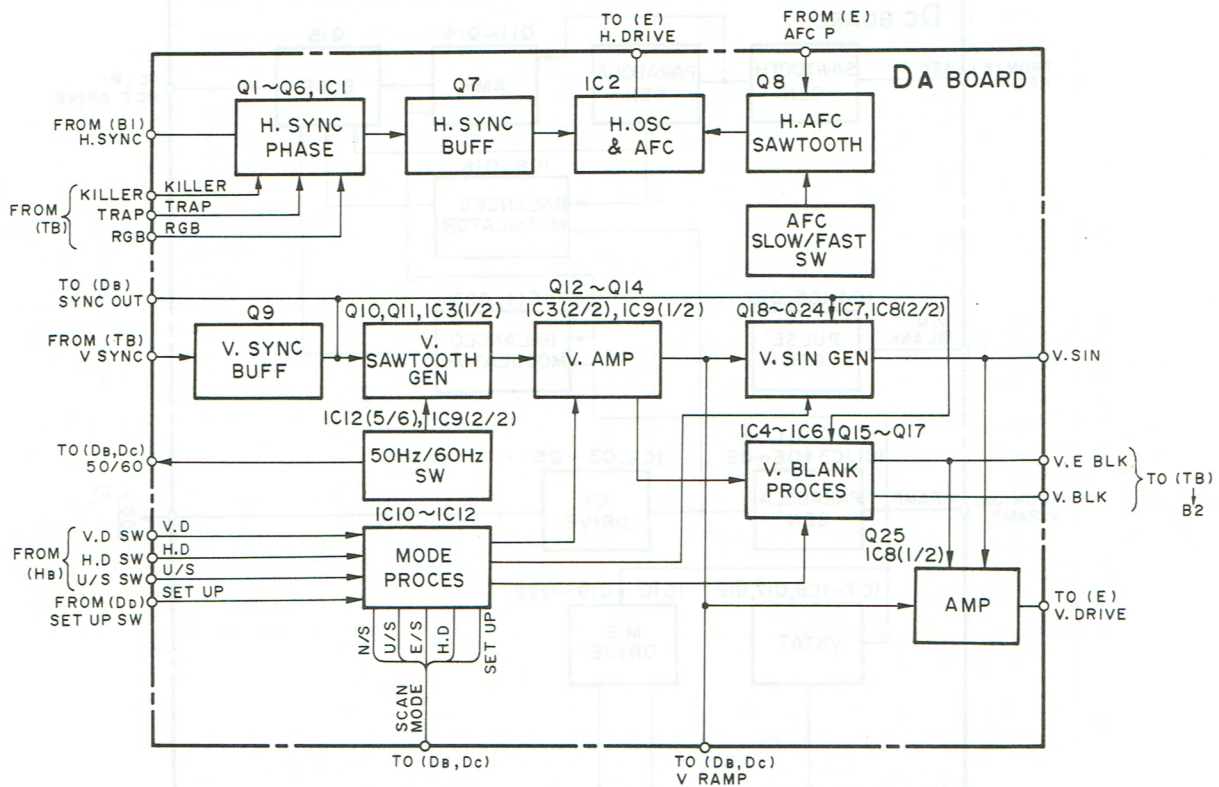


BK BOARD BLOCK DIAGRAM

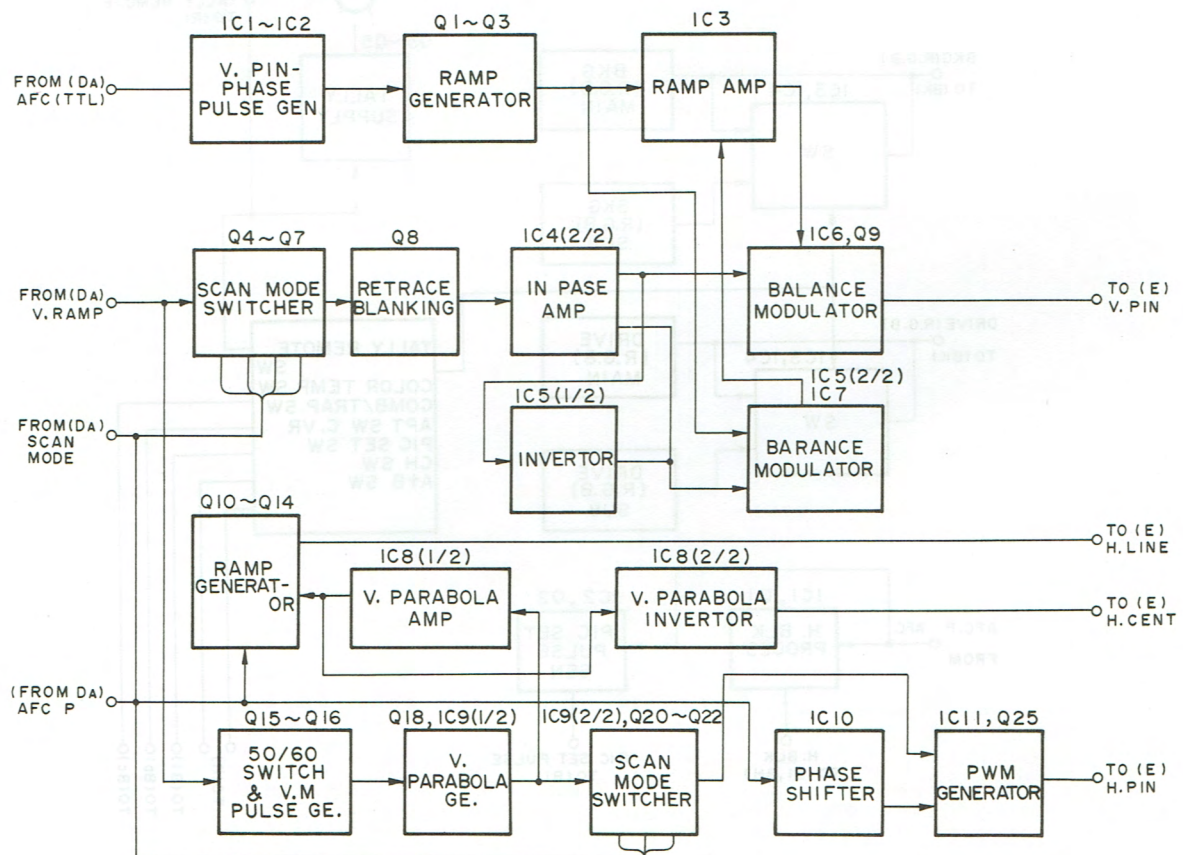
BK BOARD BLOCK DIAGRAM



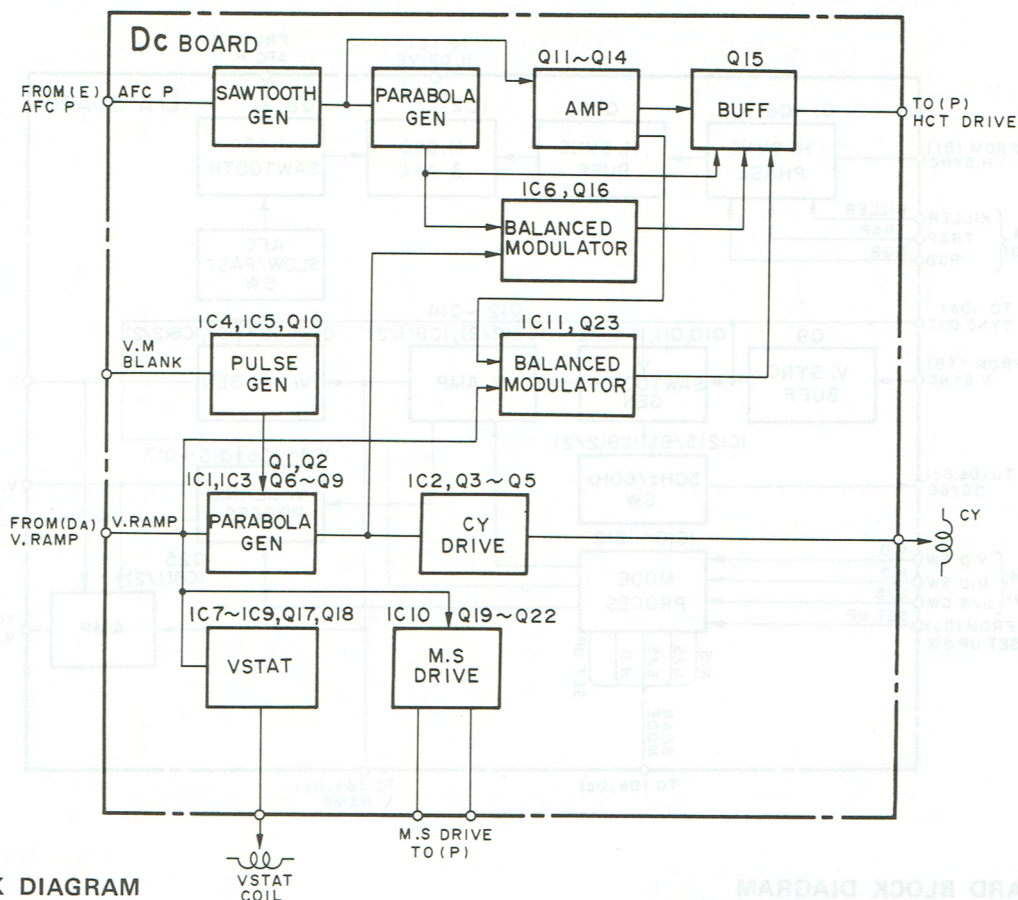
DA BOARD BLOCK DIAGRAM



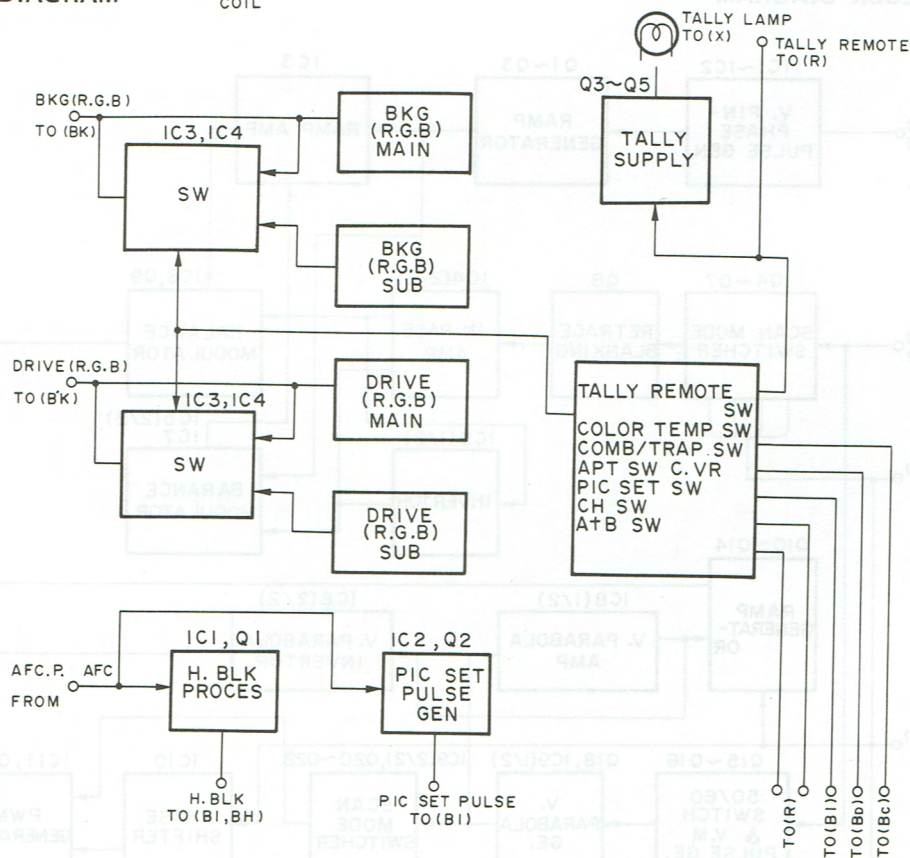
DB BOARD BLOCK DIAGRAM



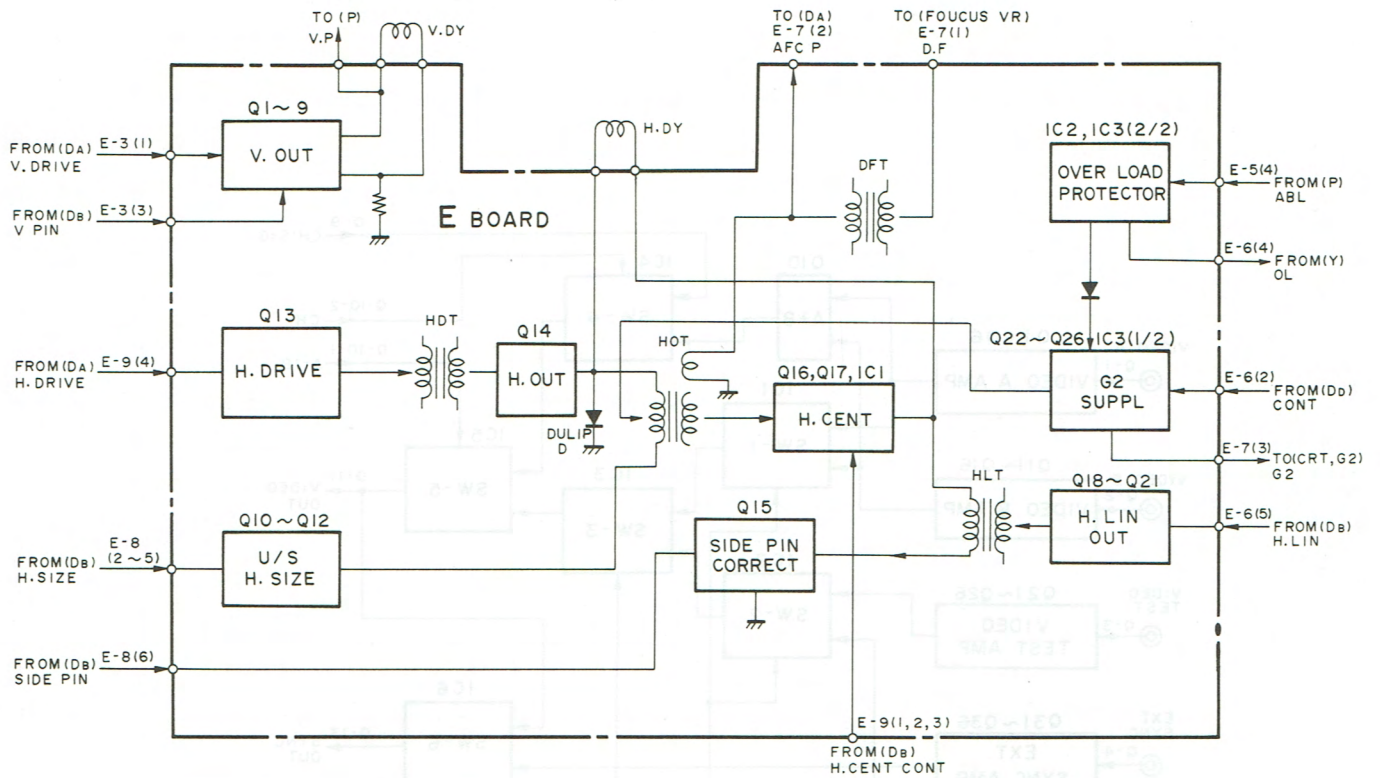
DC BOARD BLOCK DIAGRAM



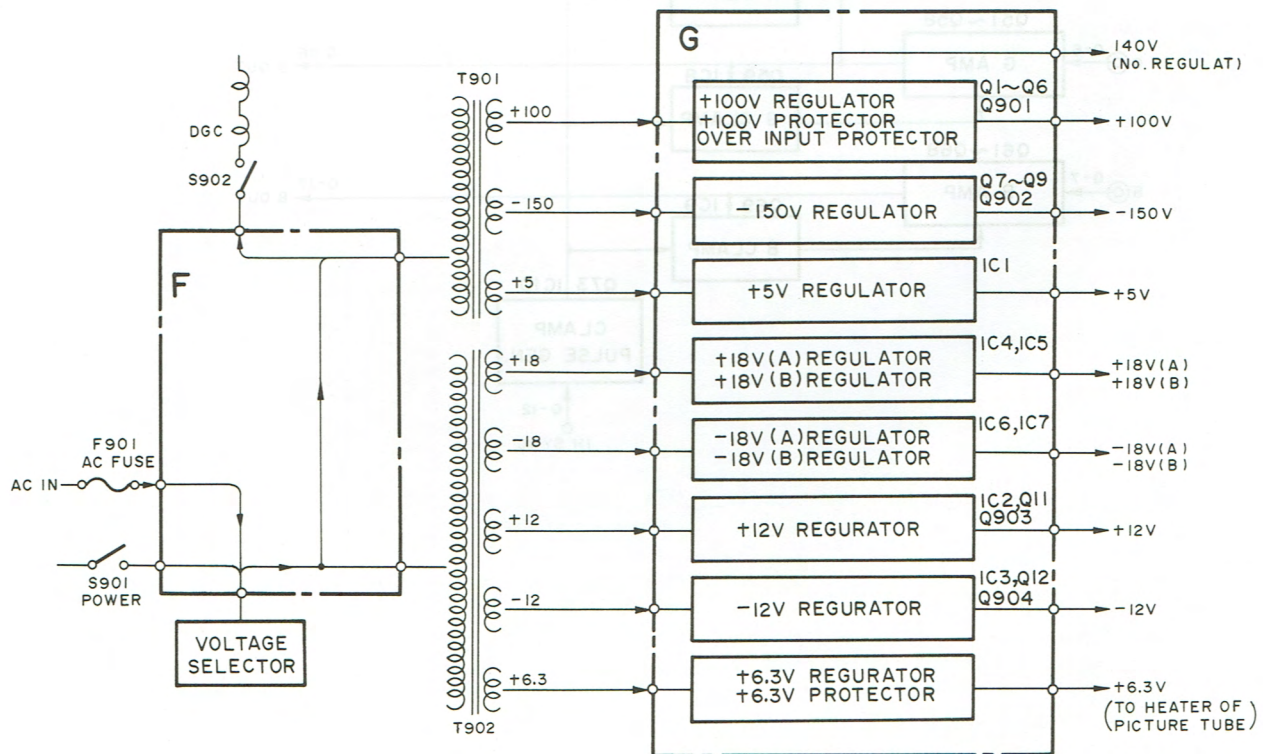
DD BOARD BLOCK DIAGRAM



E BOARD BLOCK DIAGRAM

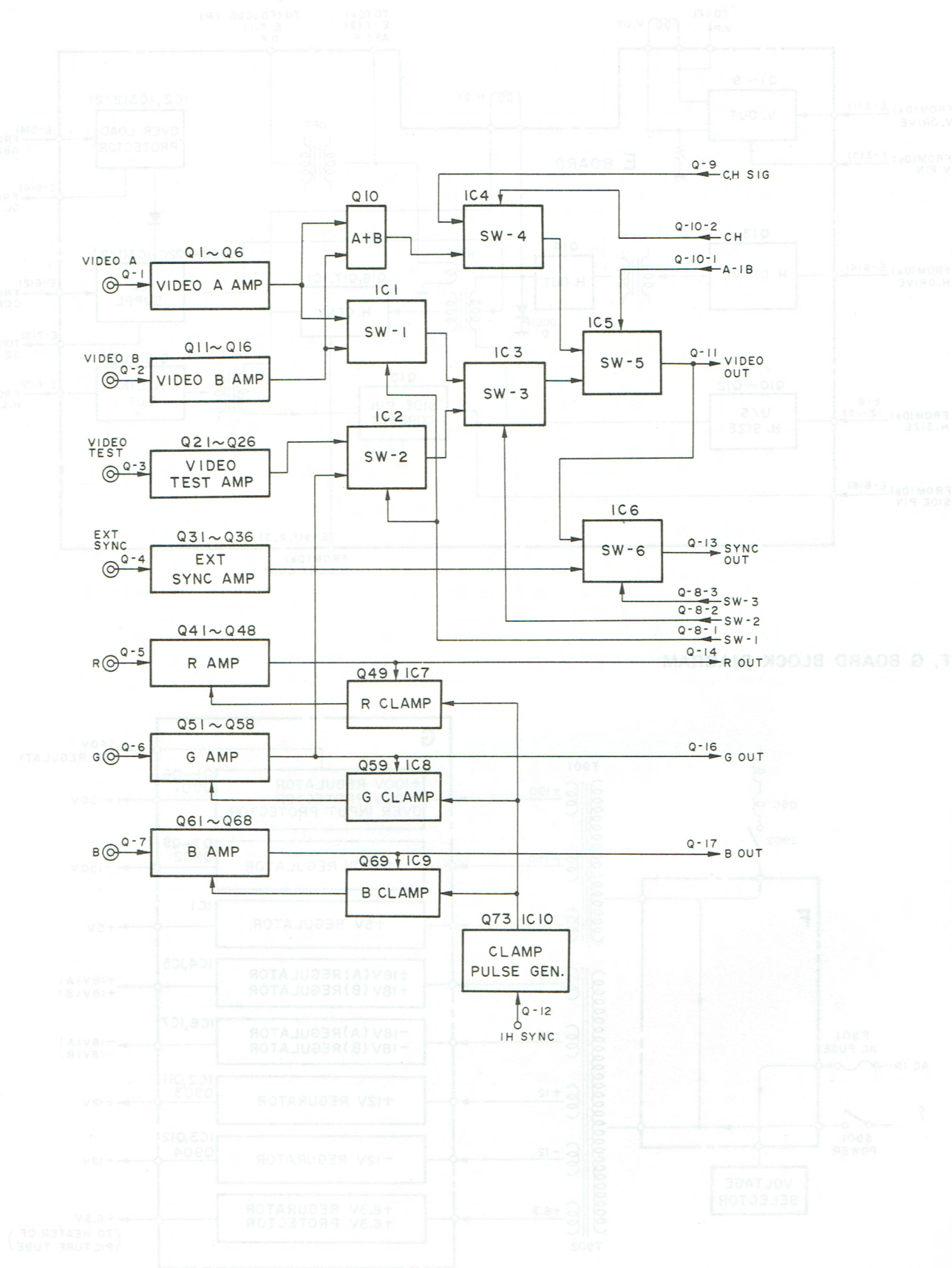


F, G BOARD BLOCK DIAGRAM

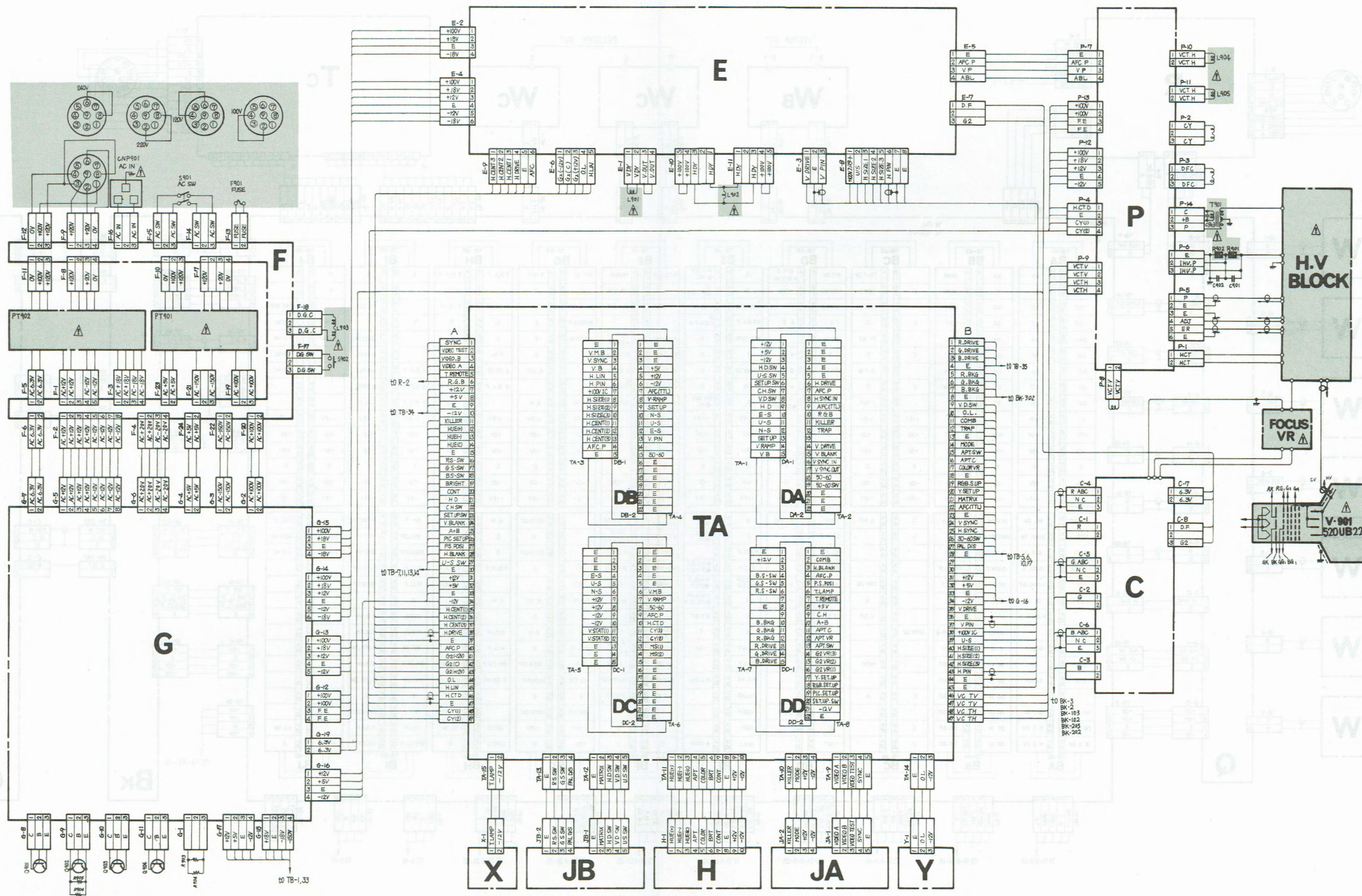


Q BOARD BLOCK DIAGRAM

Q BOARD BLOCK DIAGRAM
















5-3. MOUNTING AND SCHEMATIC DIAGRAMS




Note:

Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.

- All capacitors are in μF unless otherwise noted. p : μF
50 WV or less are not indicated except for electrolytics.
- All resistors are in ohms, 1/4W on the BK, E, G, H and P boards and 1/6W on the rest of the boards unless otherwise specified.
k Ω : 1000 Ω ; M Ω : 1000 k Ω
-  : nonflammable resistor.
- Δ : internal component.
-  : direct connection to points marked  on the chassis
-  : panel designation.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The components identified by  in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
When replacing components identified by , make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by  and repeat the adjustment until the specified value is achieved.
Refer to R35, R36, R37, R59, R60, R76, R77 and R78 Adjustment on page 4-13~4-15.

When replacing the part in below table, be sure to perform the related adjustment.

Part replaced ()	Adjustment
D8, D11, R34, R35, R36, R37, R58, R59, R60, R76, R77, and R78, on P board. HV BLOCK.	R35, R36, R37, R59, R60, R76, R77 and R78 Adjustment on Page 4-13~4-15.

- Voltages are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- Reading are taken with a 10 M Ω digital multimeter.
-  : adjustment for repair.
-  : B+ bus.
-  : B- bus.
- Readings and waveforms are taken with a color-bar signal input and with a 75 Ω terminator connected to an open terminal.
- Switches and controls are set as follows unless otherwise noted.


INPUT switch A
SYNC switch INT
MODE switch AUTO
UNDER SCAN switch NORMAL
DELAY-V switch NORMAL
DELAY-H switch NORMAL
BLUE ONLY switch NORMAL
MATRIX switch NORMAL
PAL switch D

PHASE control
CHROMA control
BRIGHTNESS control
CONTRAST control
APERTURE control



} PRESET position
(fully counterclockwise locked position)

PRESET position in DRAWER

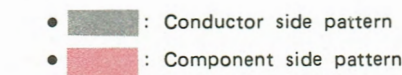
DA BOARD AFC switch (S1) FAST
SYSTEM switch (S2) 50 Hz
DD BOARD SET UP switch (S8) OFF
PIC SET UP switch (S9) OFF
APERTURE switch (S7) 4.5 MHz
APERTURE switch (S6) MANUAL
FUNCTION switch (S10) OFF
FUNCTION switch (S11) A + B
TALLY switch (S4) ON
COLOR TEMP switch (S12) PRESET

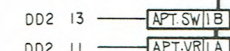
-  : selected to yield optimum performance.

Note:

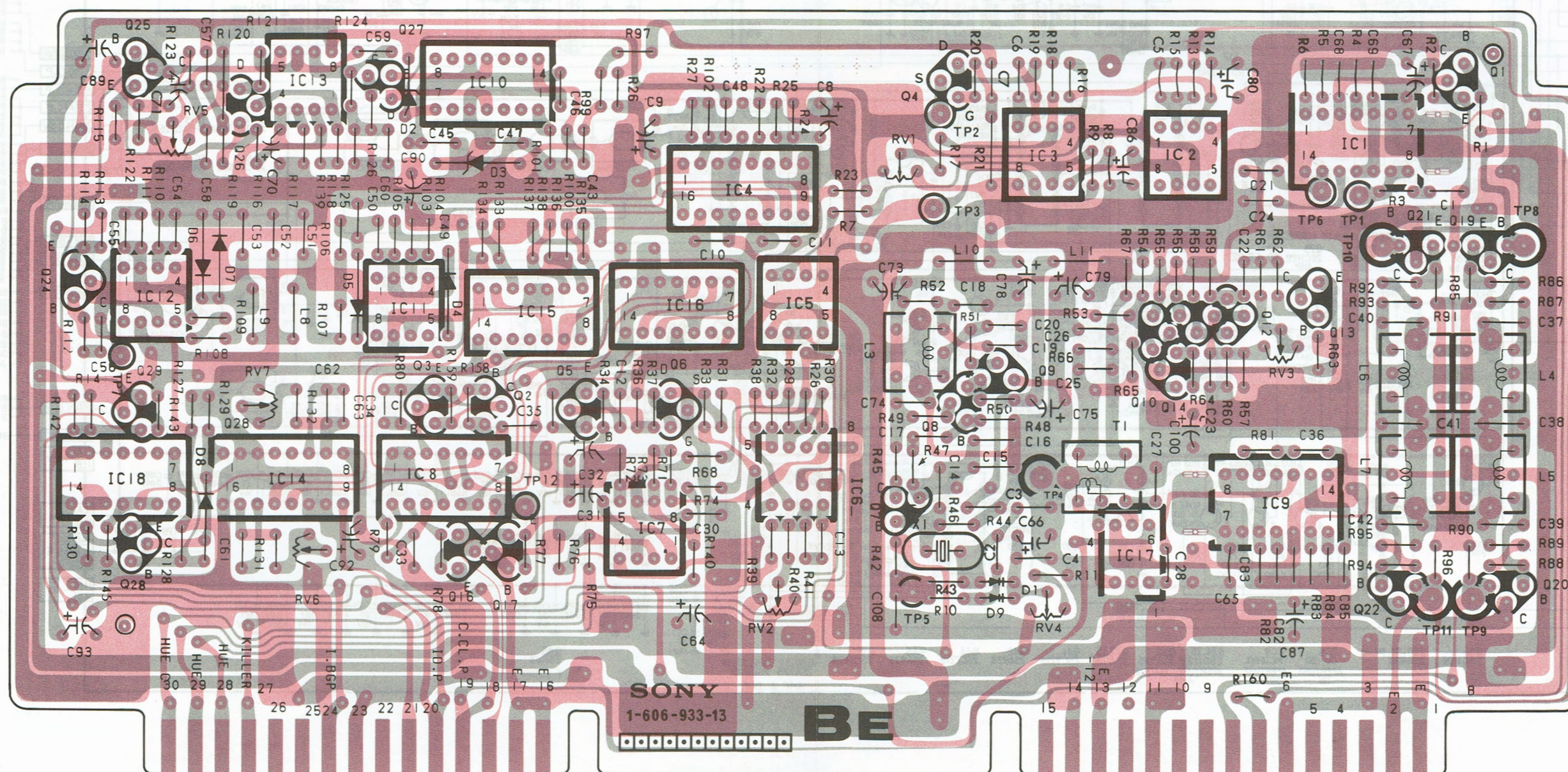
-  : Conductor side pattern
-  : Component side pattern

					4
2	40	39	21	37	38 36
				20	
6	17	18	19		
	2				

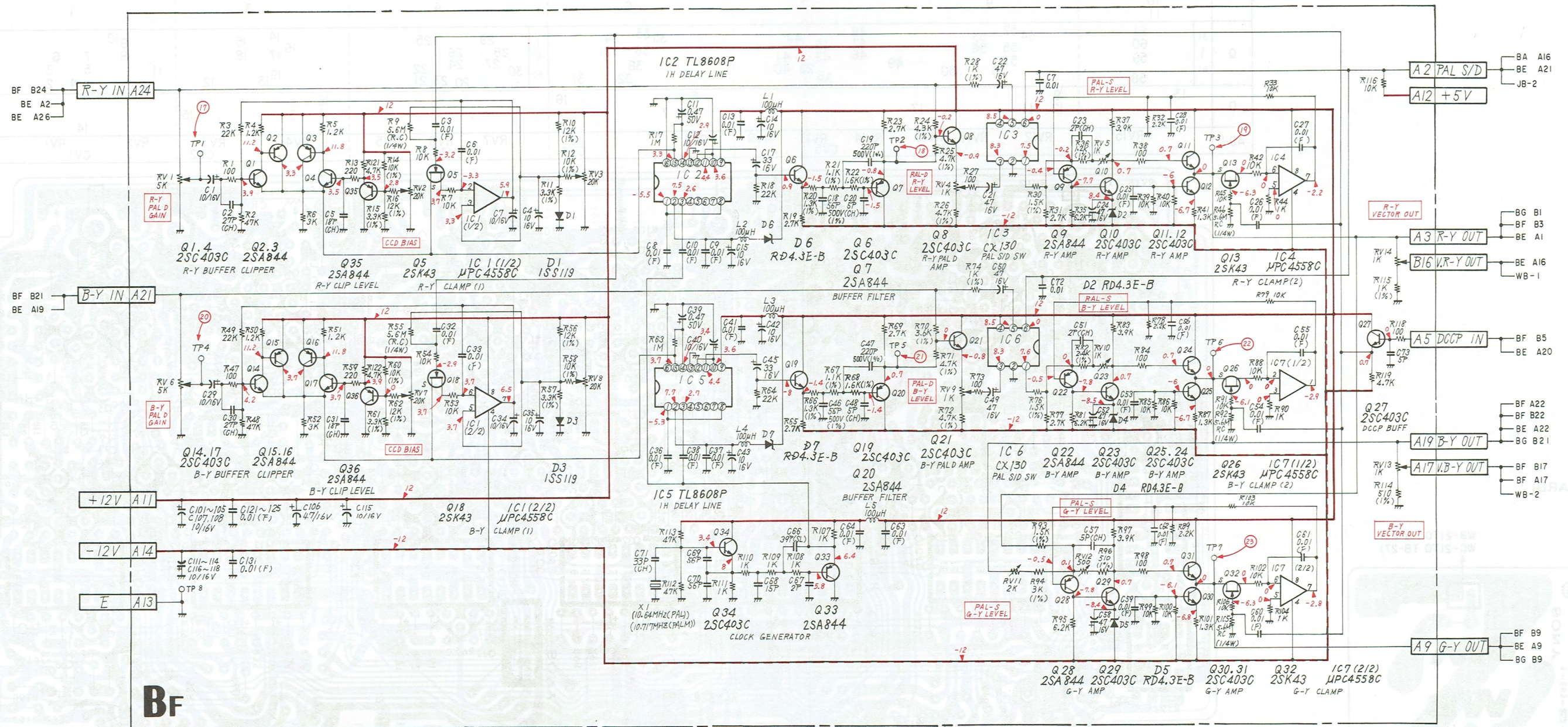




IC	18 12		13	11 8		10 15	7 16		4 5	3		2	1							
Q	24	25	26	27	3	16	2	17	5	6	7	8	9	10	11	12	13	21	1	19
D	6 7		5	2	4	3					1								22	20
ADJ	RV5		RV7	RV6			RV2		RV1		RV4		RV3							

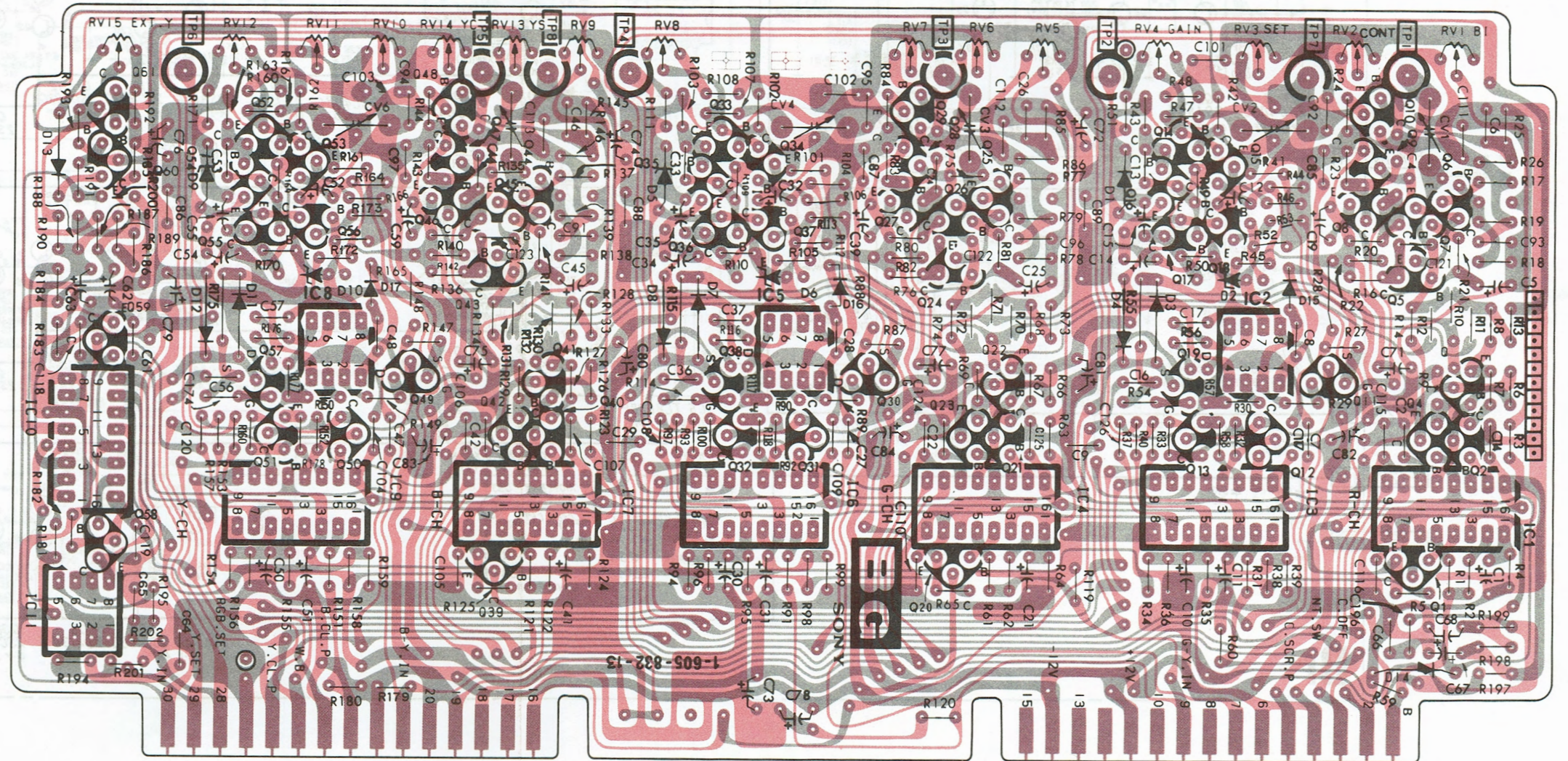


IC	5 2					1					6 3					7 4																																		
Q	34 33					19 20 6					14 15 16 17					21 8					23 22 9 10					25 24 13 11 12					26 27					28 29 31 30 32														
D	1 2					4 3					35					5					7					3					4					2					5									
ADJ	RV1					RV2					RV3					RV14					RV6 RV7 RV8					RV13					RV9 RV4					RV10 RV5					RV12					RV11				

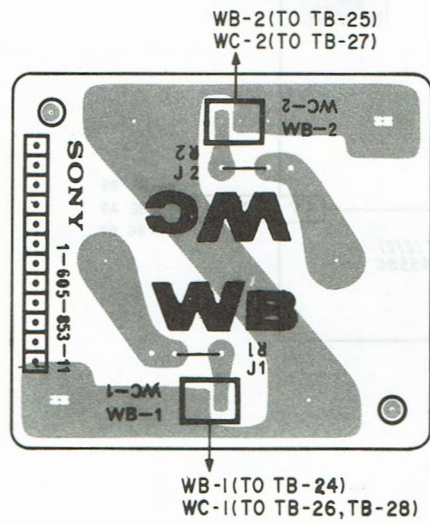


[BG BOARD]

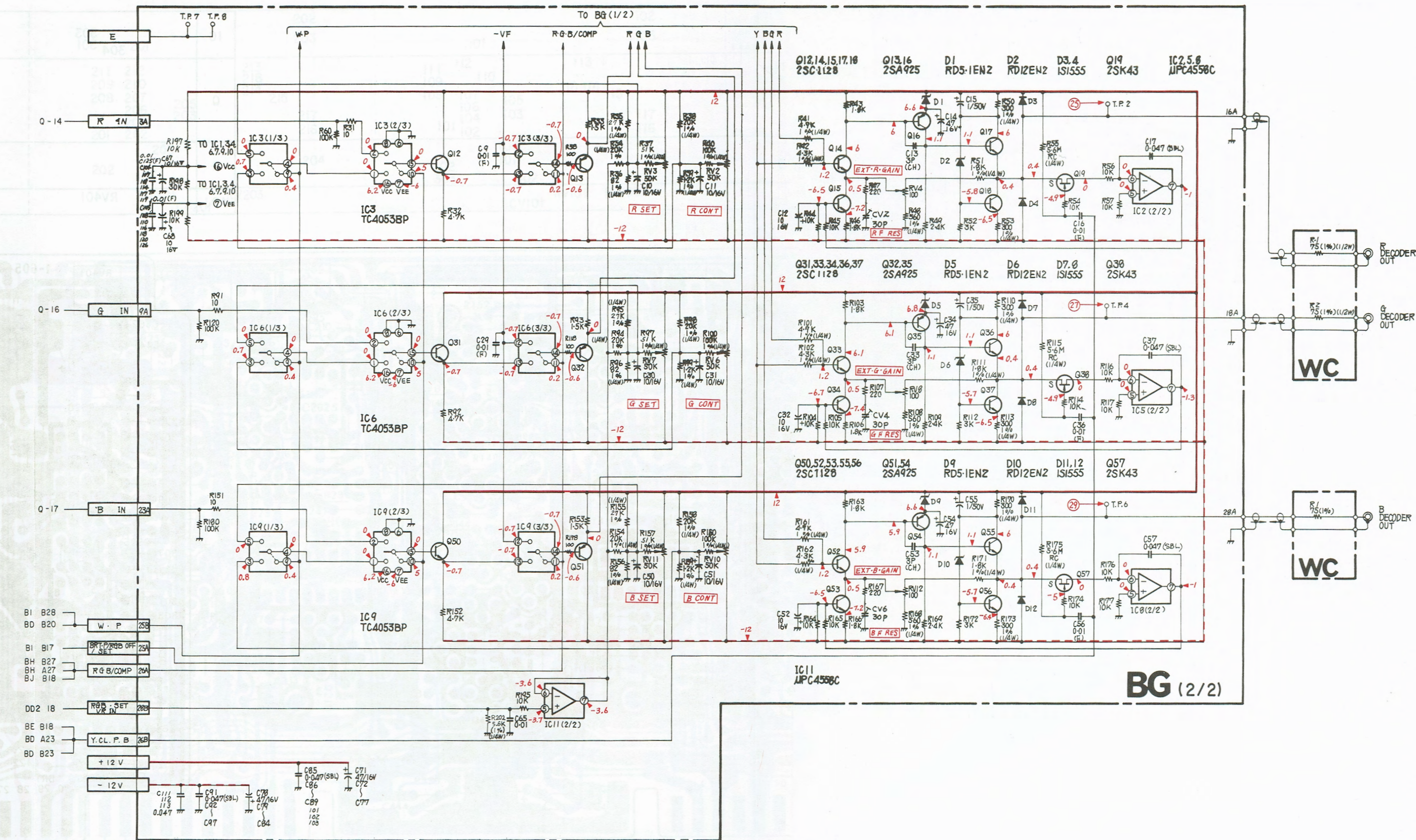
IC	10		9			8			7			6			5			4			3			2			1		
Q	31 5 61	61 60 59 58	54 52 55 57 51	53 56	48 47 46	45 43 41 39	44 40	35 33 36 38 32	34 37	31	1 30	29 28 27 26 24 20 23 21	25	16 17 19 13	14 15 18	12	11	9 8	10 7 5 4	6 3 2									
D	13		9 12 11	17			5 8 7	16						16 4 3	15			14											
ADJ	RV15		RV12	RV11 CV6	RV10	RV14 CV5	RV13	RV9	RV8	CV4			RV7	RV6 CV3	RV5	RV4	RV3 CV2	RV2	RV1 CV1										



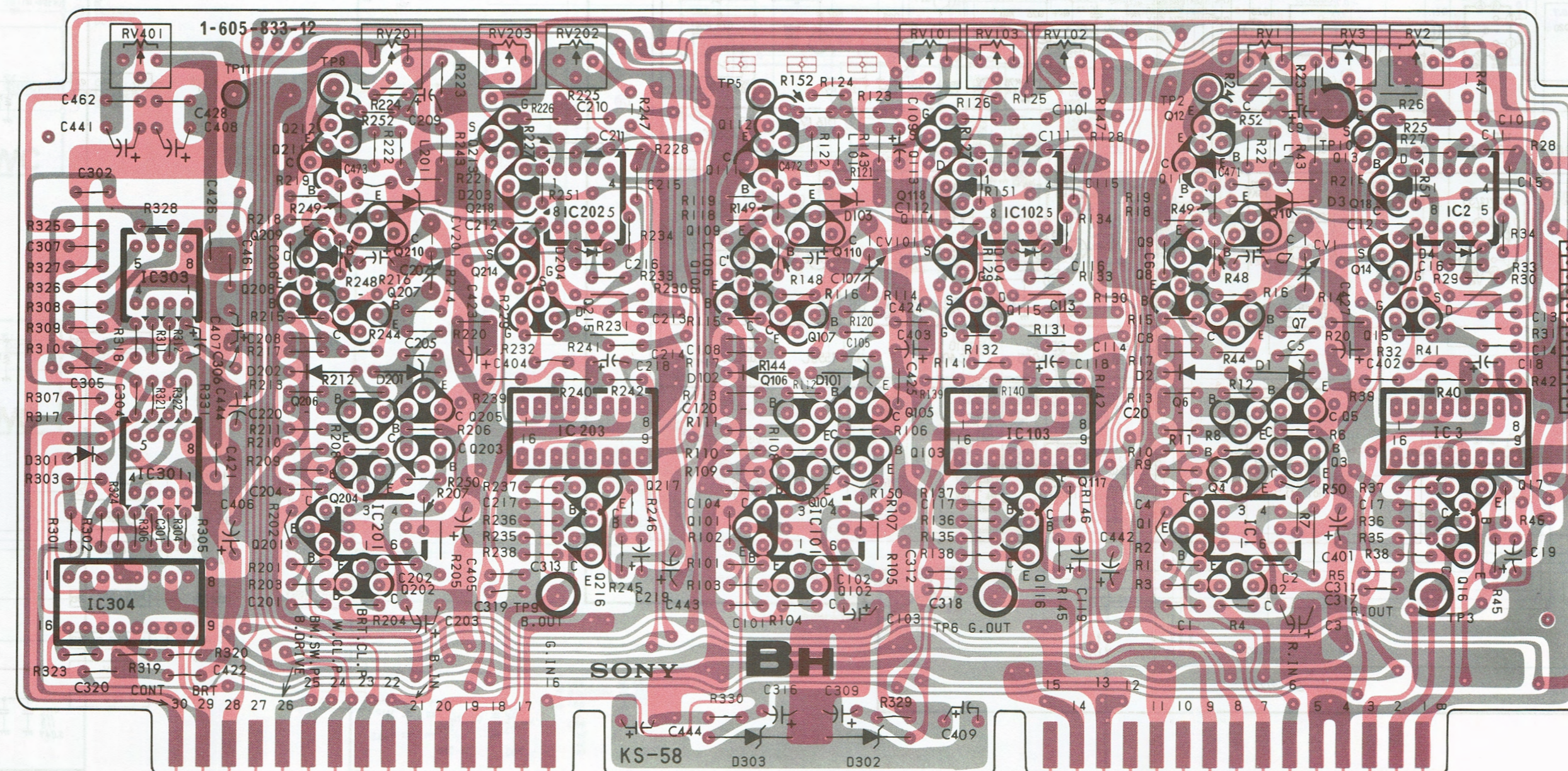
[WC BOARD]

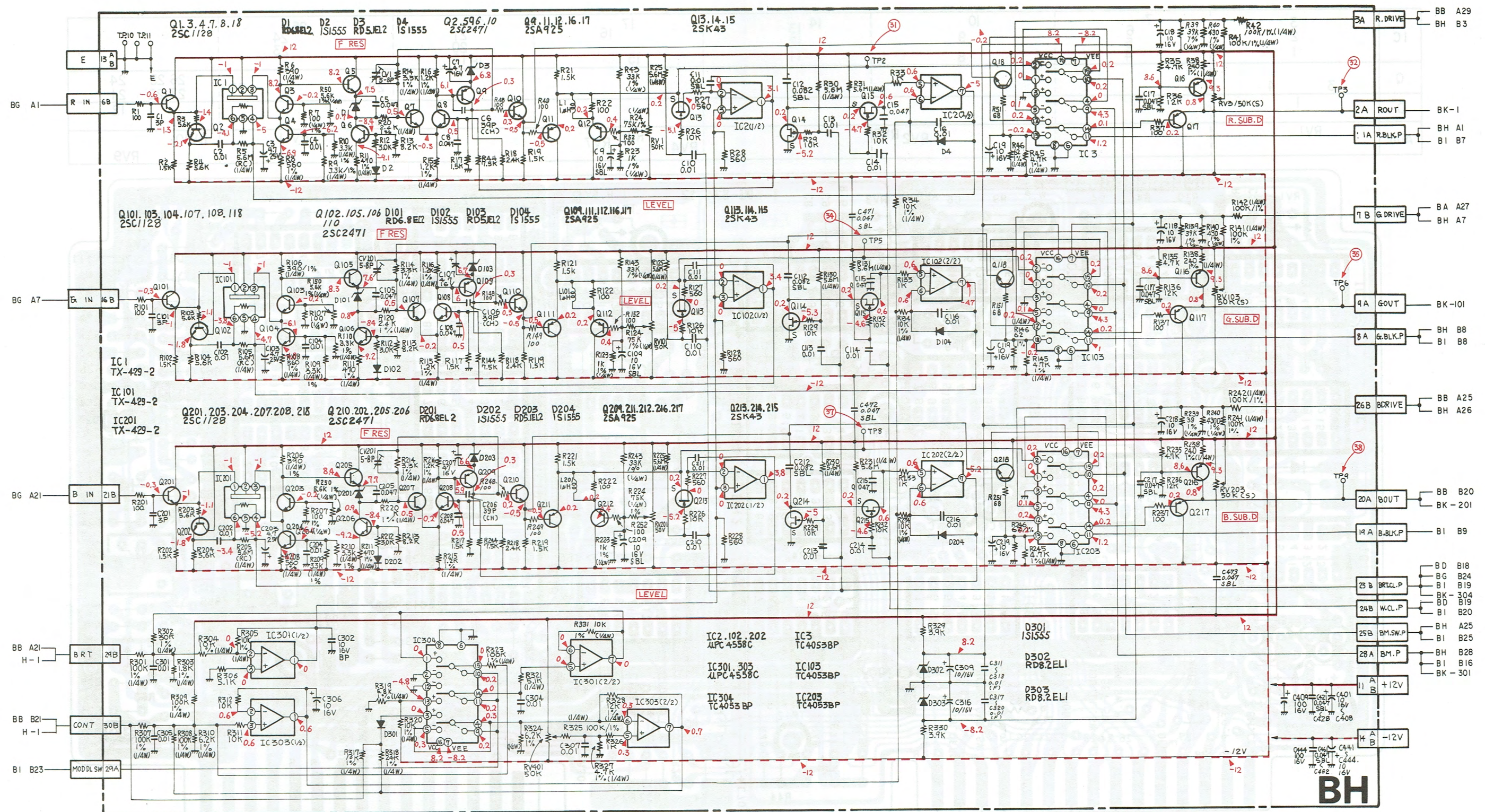


- : Conductor side pattern
- : Component side pattern

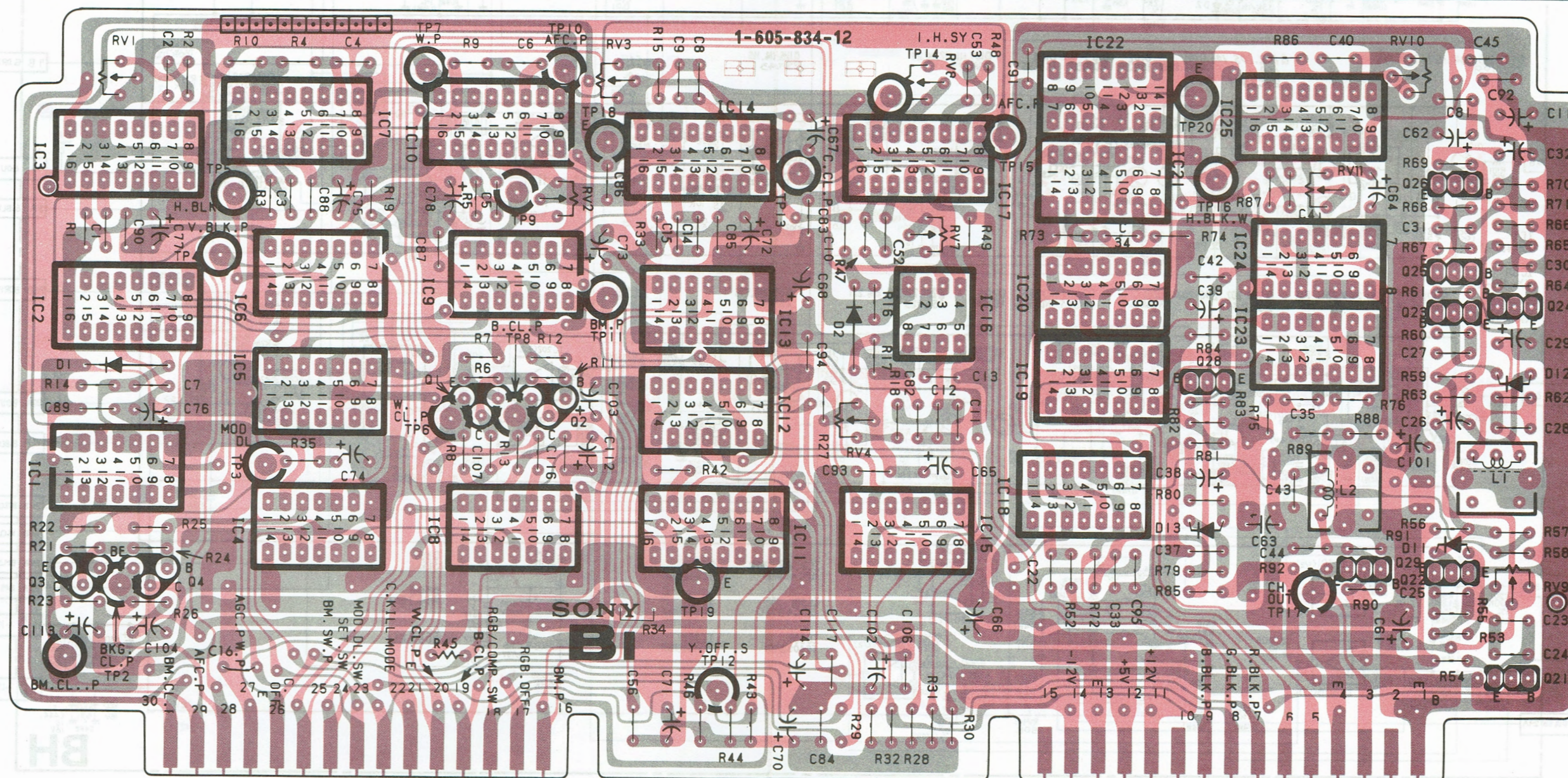


IC	303 301 304	201	202 203	101	102 103	2 3					
Q		211 209 208 207 206 204 201	212 210 214 205 203 216	213 218 215 217	111 109 108 107 106 104 101	112 110 105 103 117 116	113 118 114 115	11 9 8 7 6 4 2	12 10	13 18 14 15	17 16
D	301	202	203 201	204	102 303	103 101	302	104	2	3 1	4
ADJ	RV401	RV201 CV201	RV203		CV101	RV101	RV103		RV1	RV3	



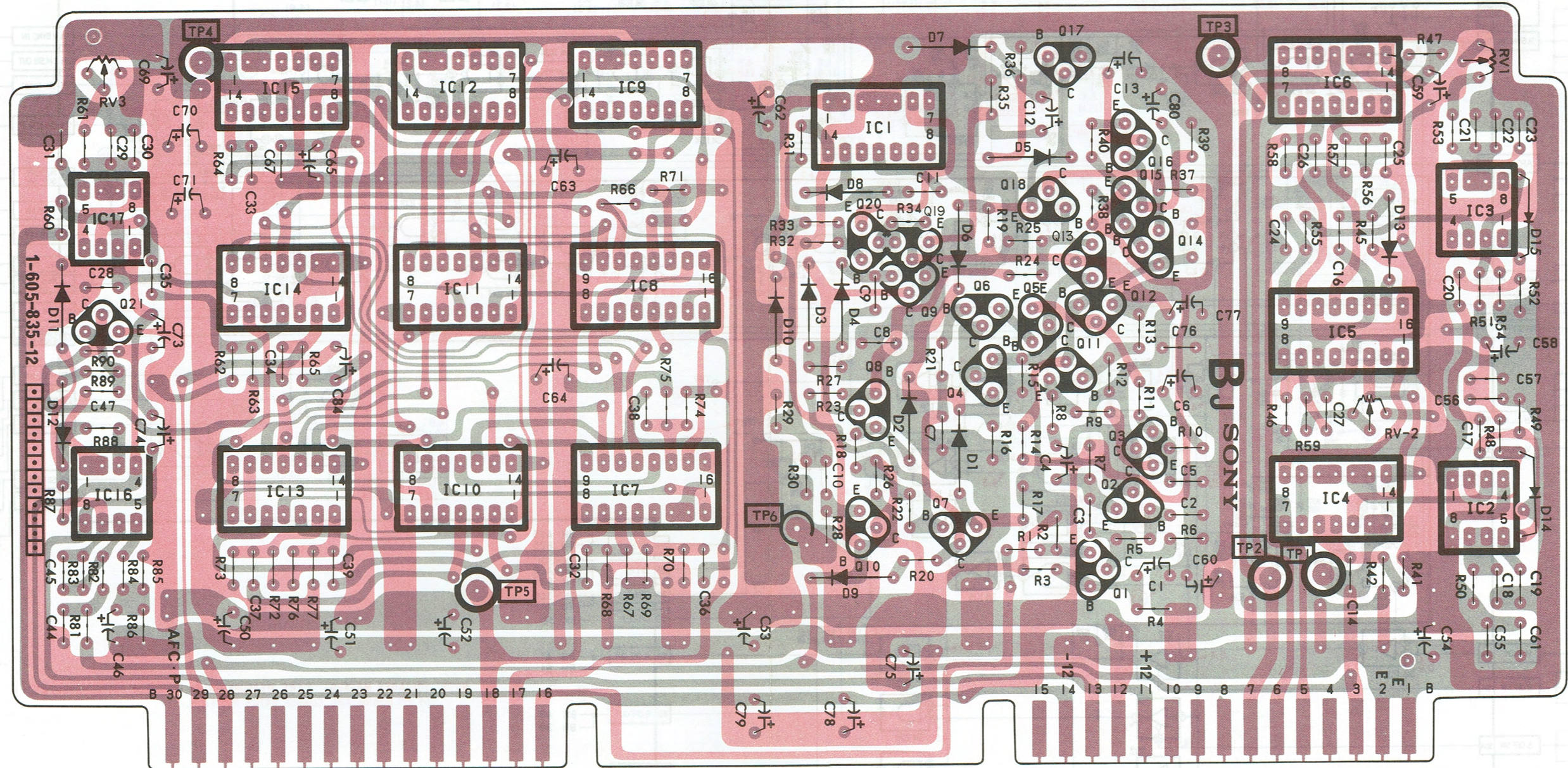


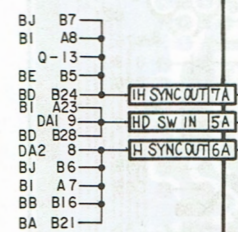
IC	3 2 1	7 6 5 4	10 9 8	14 13 12 11	17 16 15	22 21 20 19 18	25 24 23	
Q	3	4	1	2			26 25 24	28
D	1				2		29	23 22 21
ADJ	RV1		RV2 RV3	RV4	RV8 RV7		RV11	RV10 RV9



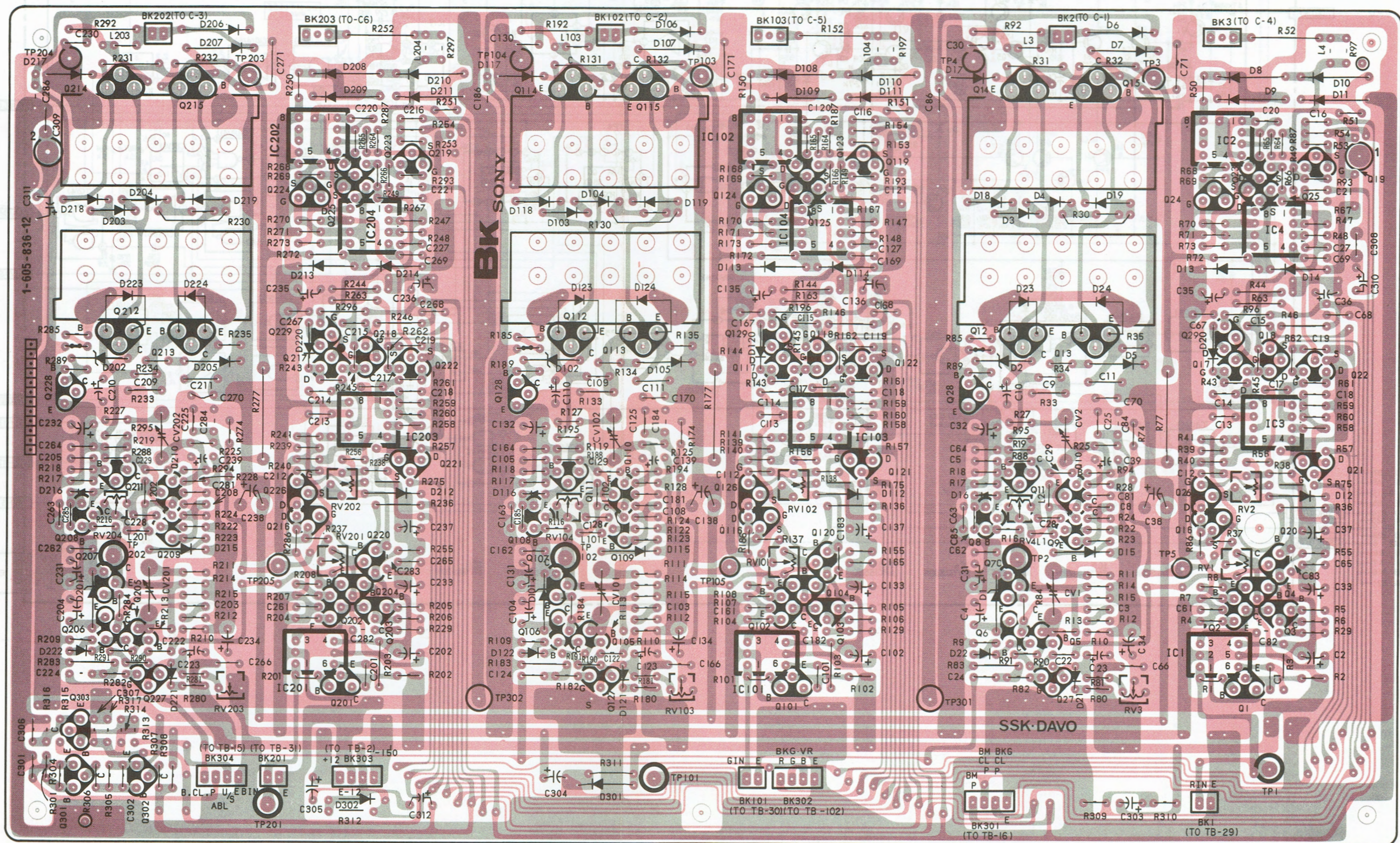


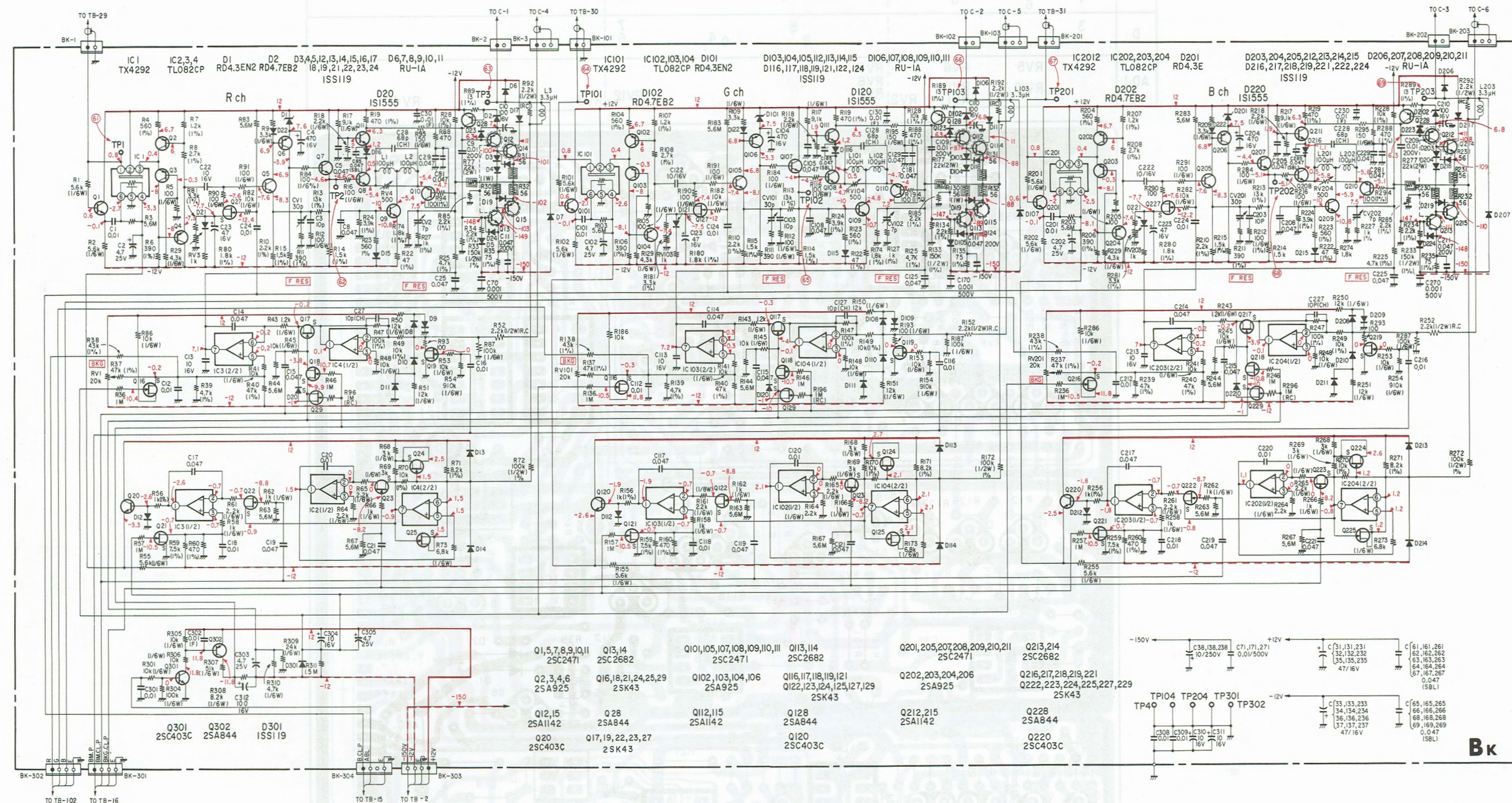
IC	17 16	15 14 13	12 11 10	9 8 7	1	6 5 4	3 2
Q	21				20 19 18 17 16 15 14 10 8 9 7 6 5 11 12 2 3		
D	11 12			10 3 8 4 2	6 7 5 1	13 15 14	
ADJ	RV3					RV2	RV1





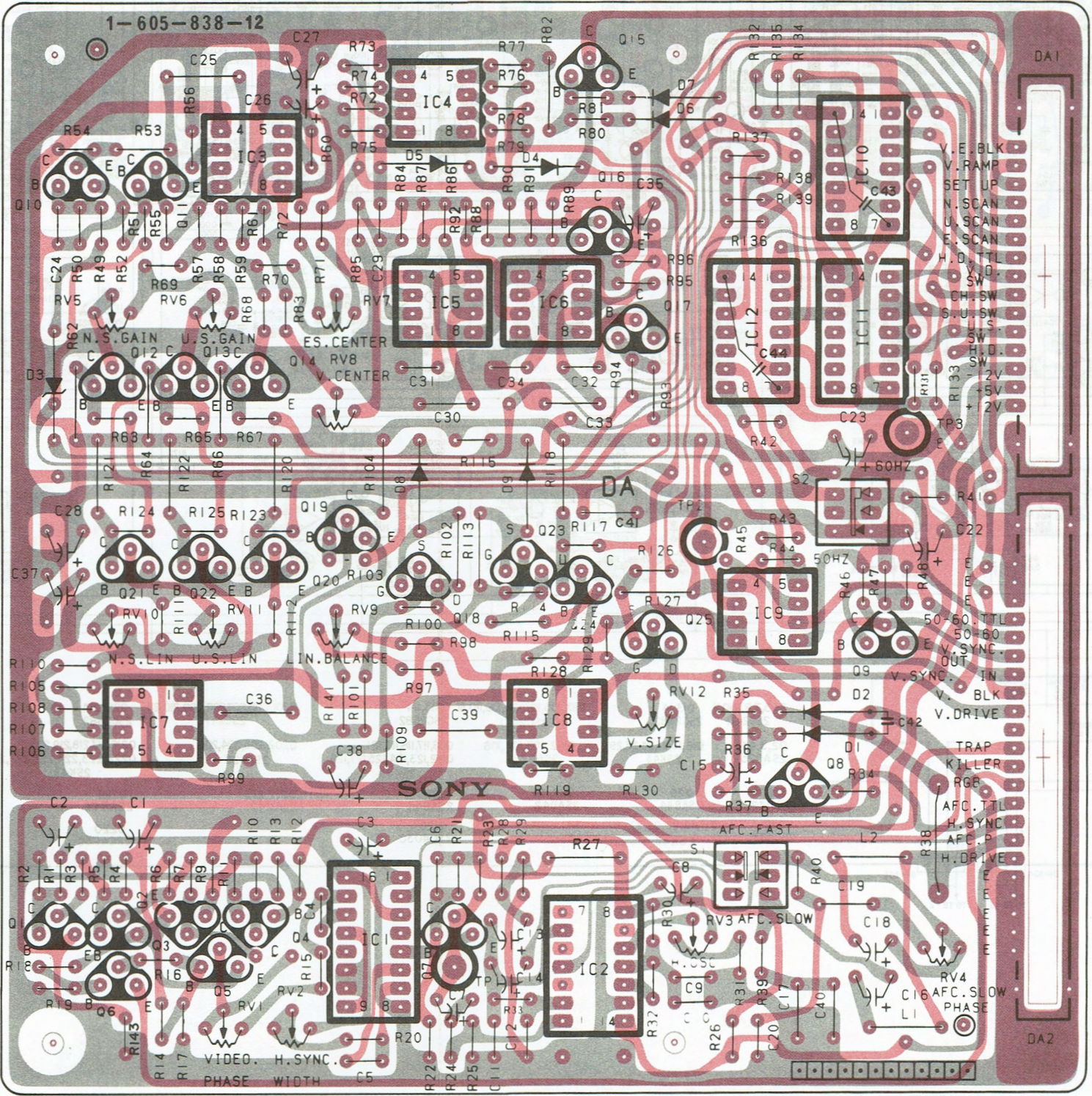
IC		202 201	204 203		102 101	104 103		2 1	4 3																	
Q	228 208 207 301	214 211 212 210 205 227 302	215 213	224 229 216 202	223 225 217 204 201	219 222 221 218 220 203	114 112 111 107 110 109 106	115 113	124 129 116 102	123 125 118 120 104 103	119 122 121	14 12	15 13	28 8	11 7	5	27	10 9	24 16	29 17	23 25	18 20	19 22	21		
D	217 216 222	218 202 201	203 223	204 221	206 207 205 215	219 224	208 209 213 220	210 211	214 212	117 118 116 122	103 104 102 101	124 119 115	106 107 105	108 109 113	110 111	114 112	17 16 22	18 3 2	23 4 1	24 21	15 19	6 7 5	8 9	10 11	13 20	14 12
ADJ	RV204	CV202 CV201	RV203	RV201	RV104	CV101	RV103	RV101	RV4	CV2 CV1	RV3	RV1														





[DA BOARD]

IC	7 3				4 5 6 2				12 9 10 11		
Q	10 12 11 13 22 14 20				19 18 7 23 15 24 16 17 25				8 9		
D	3				8 5 9 4 7 6				2		
ADJ	RV5 RV6 RV7 RV8 RV9				RV10 RV11 RV12 RV3				RV4		

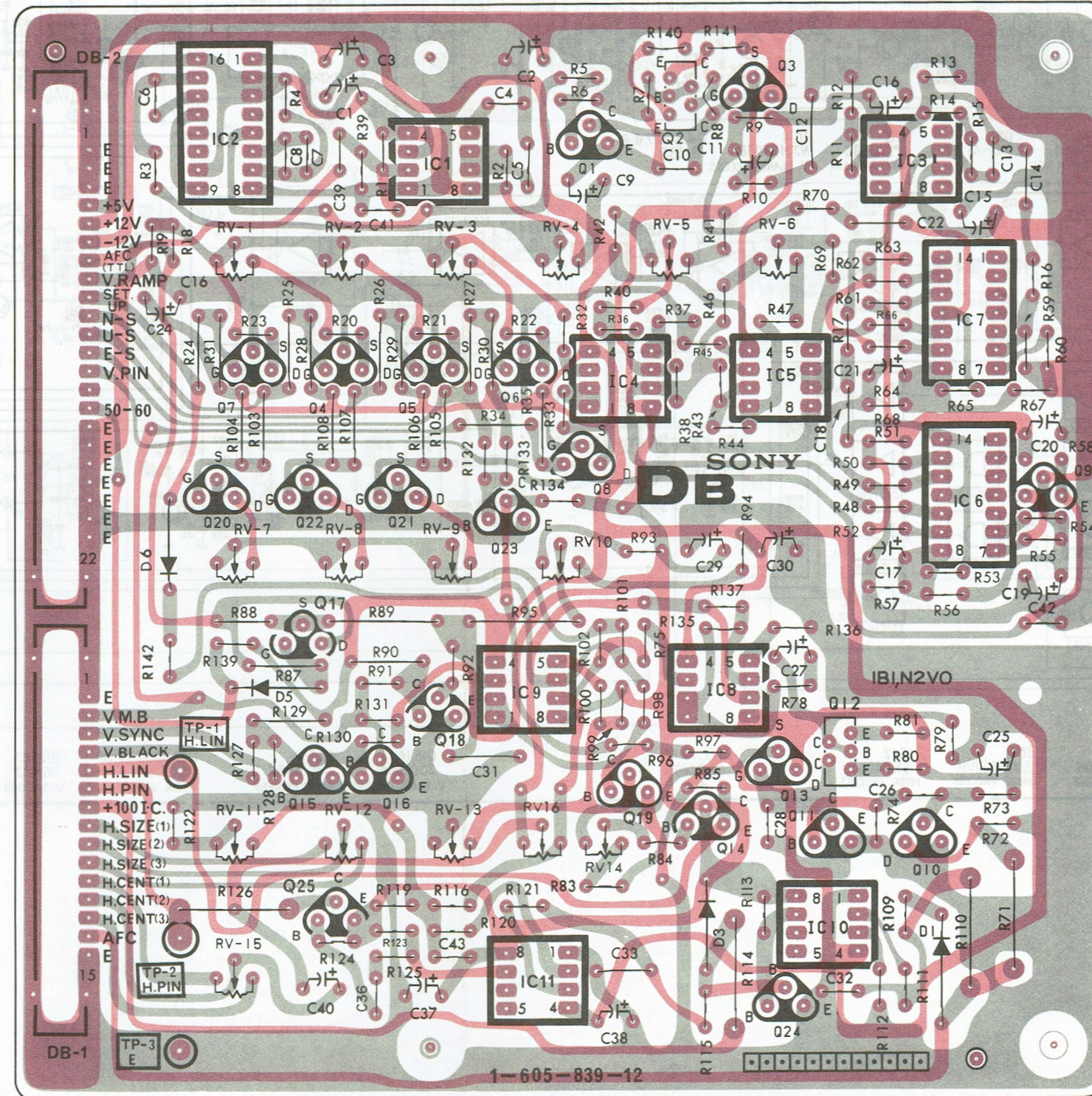


- : Conductor side pattern
- : Component side pattern

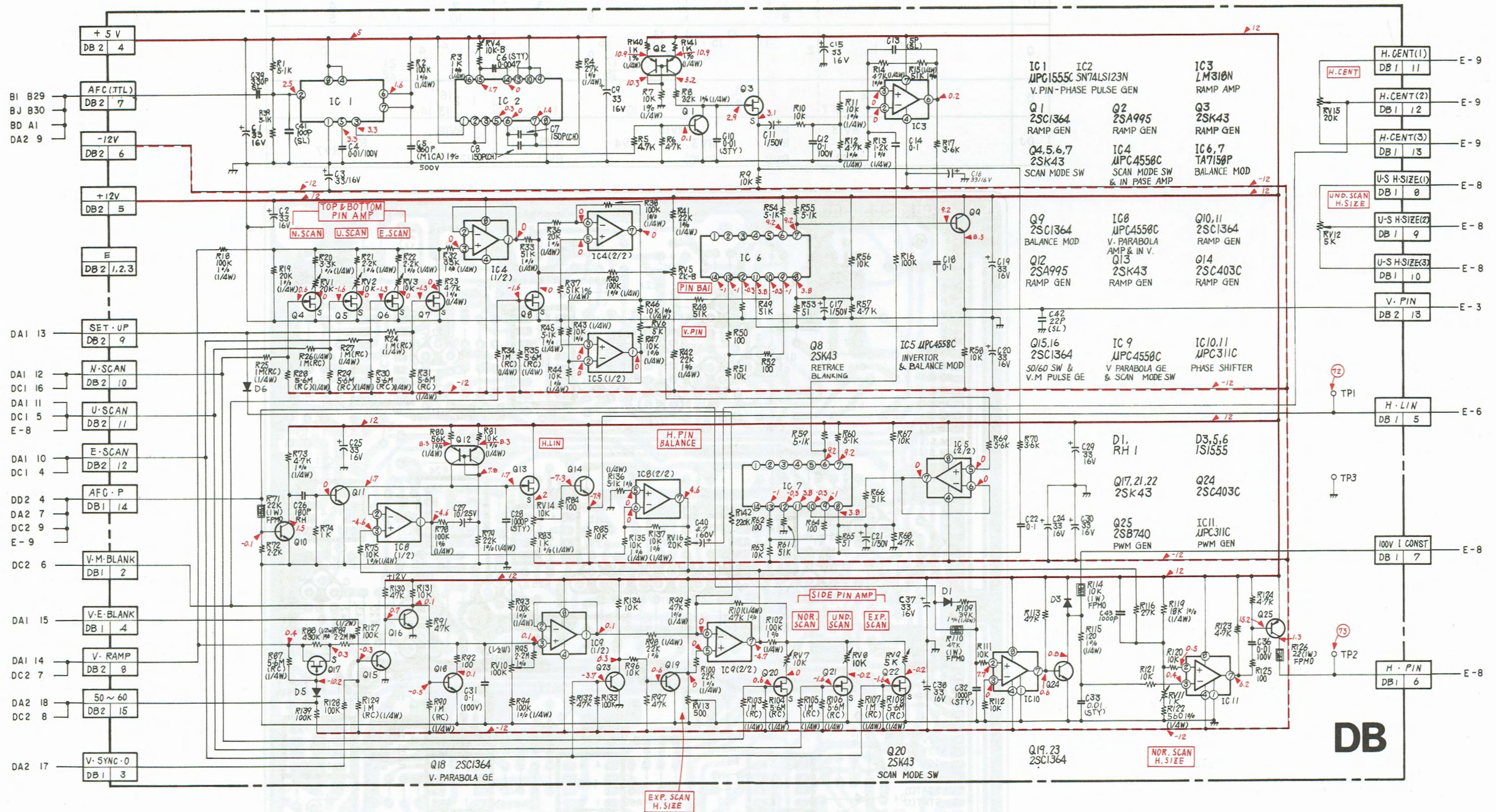


[DB BOARD]

IC		2		1	11	9	4	8	5	10	3	7	
Q	10		7	4	5	6	8	2	3		10		9
	11		20	22	17	15	16	21	18	23	19	14	13
	25												
D		6	5					3					
ADJ			RV1	RV7	RV2	RV3	RV4	RV5	RV6				
			RV15	RV11	RV8	RV9	RV10	RV14					
					RV12	RV13	RV16						

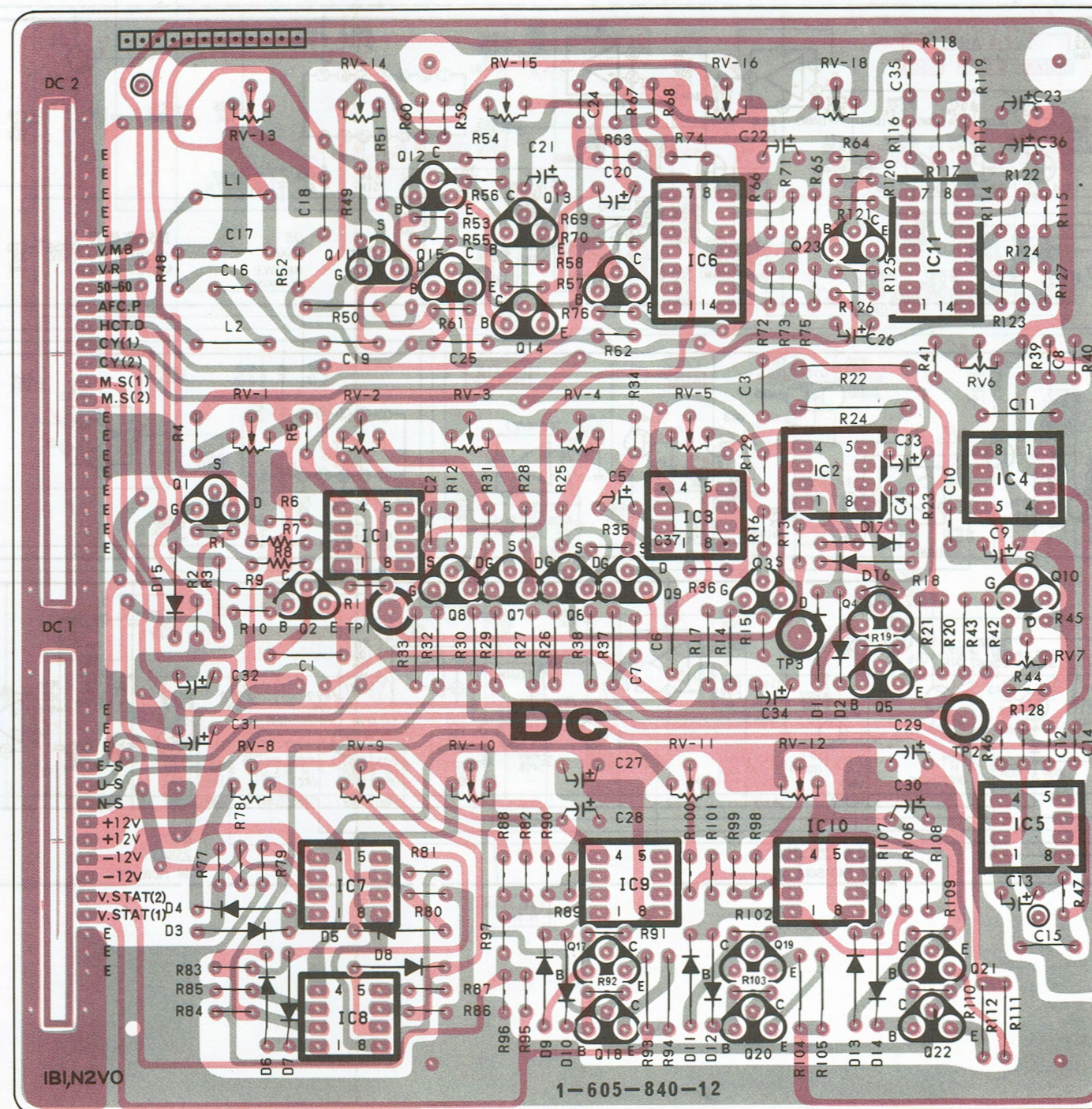


- : Conductor side pattern
- : Component side pattern

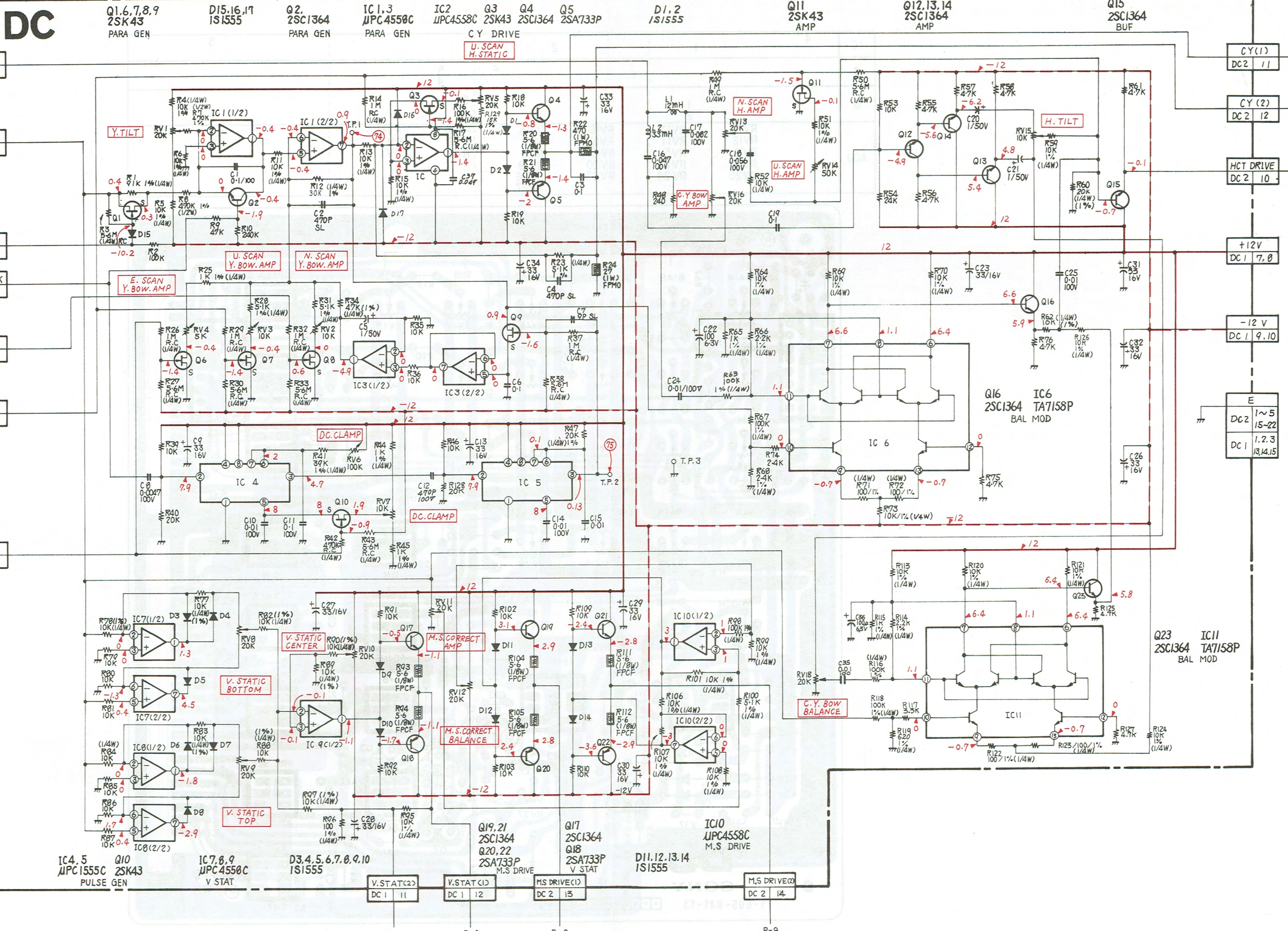


[DC BOARD]

IC				7 8	1					6 3			2 10	11			4 5										
Q			1		2		11	12 15		8		13 14	6	16 9			3 19 20	23 4 5		21 22		10					
D			15		4	3	6	7			5 8			9	10		11	12		1	2	16 17	13 14				
DJ					RV13 RV1 RV8				RV14 RV2 RV9			RV3 RV10		RV15		RV4			RV5 RV11		RV16		RV18				RV6 RV7

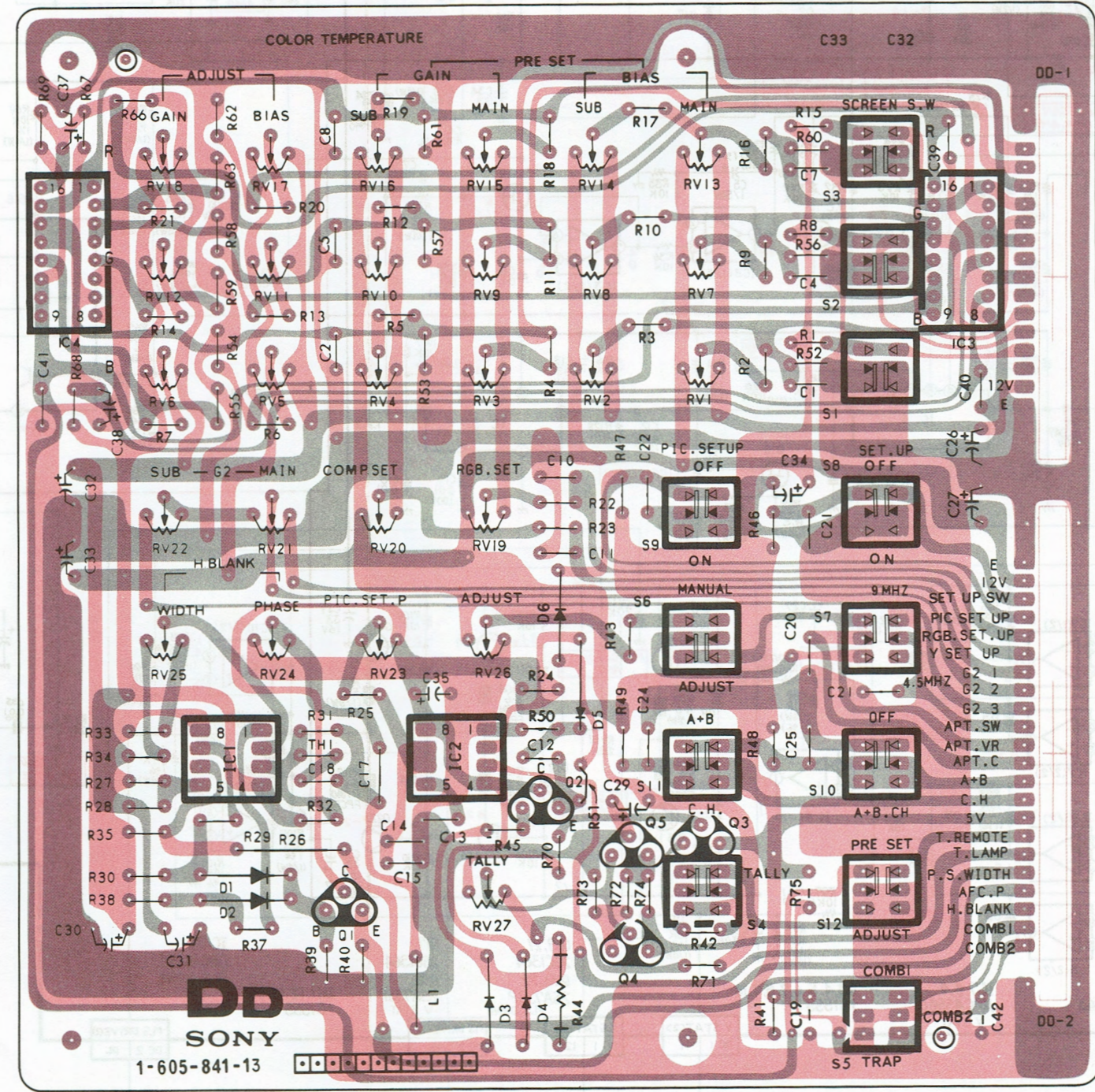


- : Conductor side pattern
- : Component side pattern

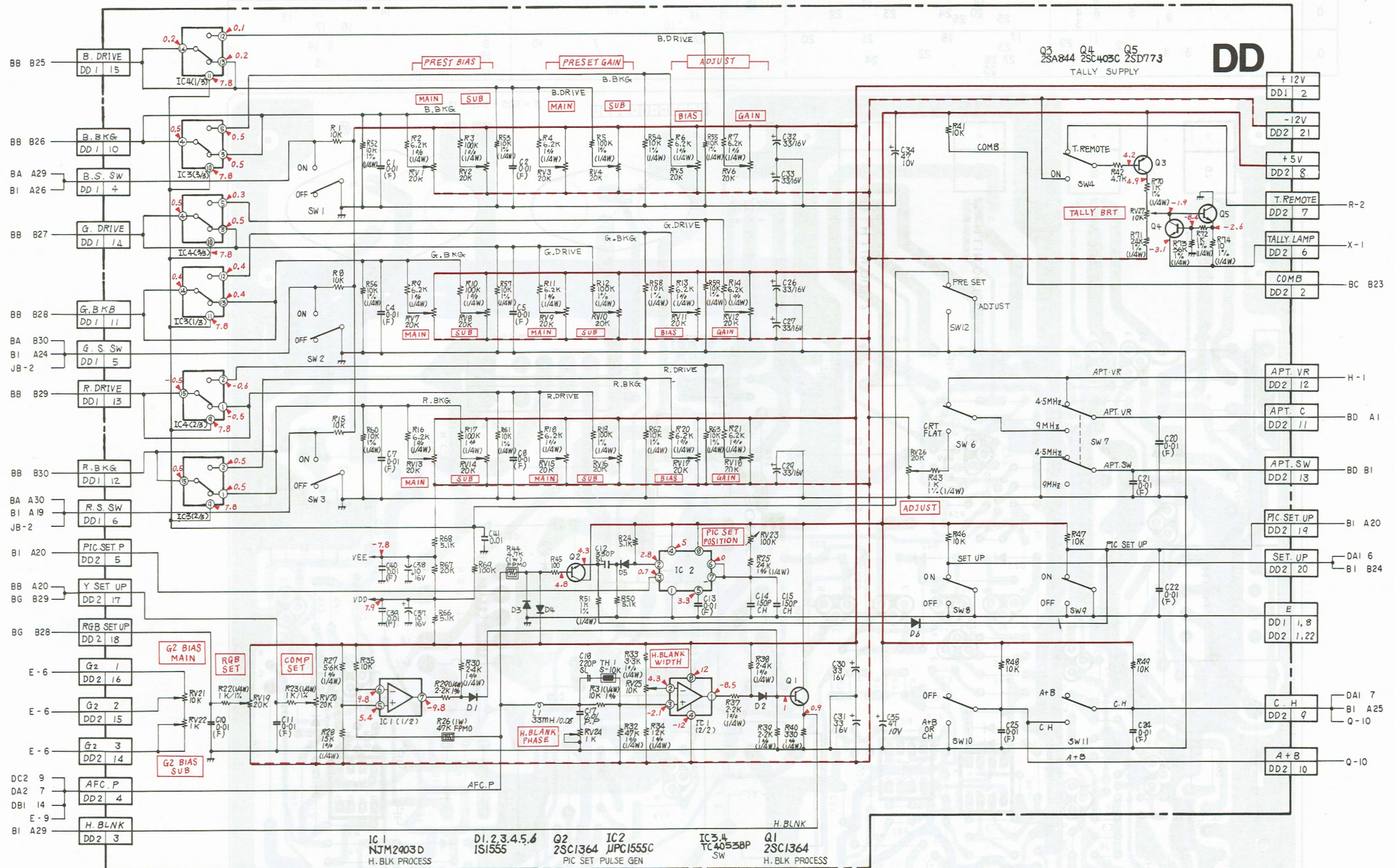


[DD BOARD]

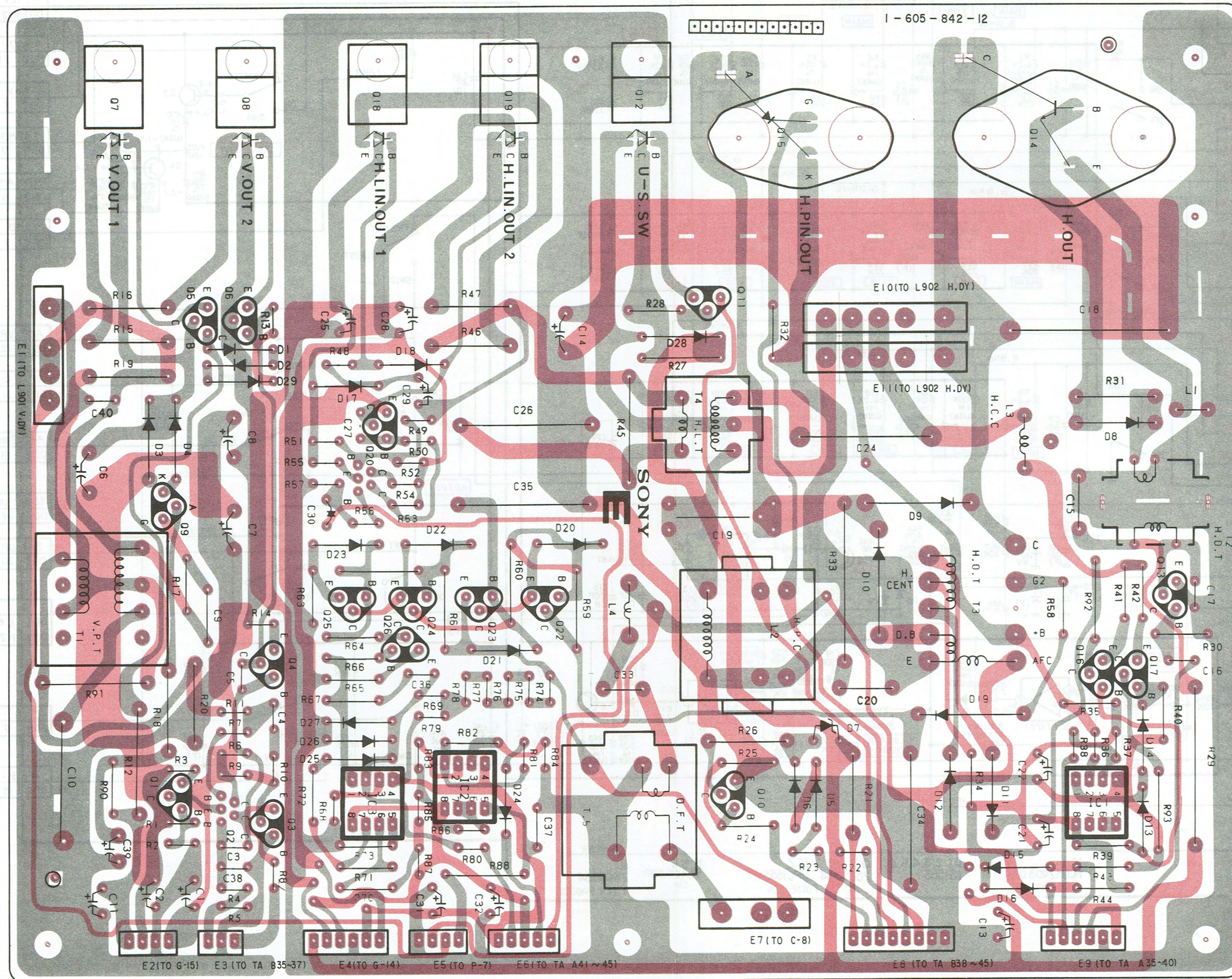
IC	4		2		3	
Q			1		2 5 4	
D	1 2		3 4		6 5	
ADJ	RV18 RV12 RV6 RV22 RV25	RV17 RV11 RV5 RV21 RV 24	RV16 RV10 RV4 RV20 RV23	RV15 RV9 RV3 RV19 RV26 RV27	RV14 RV8 RV2	RV13 RV7 RV1

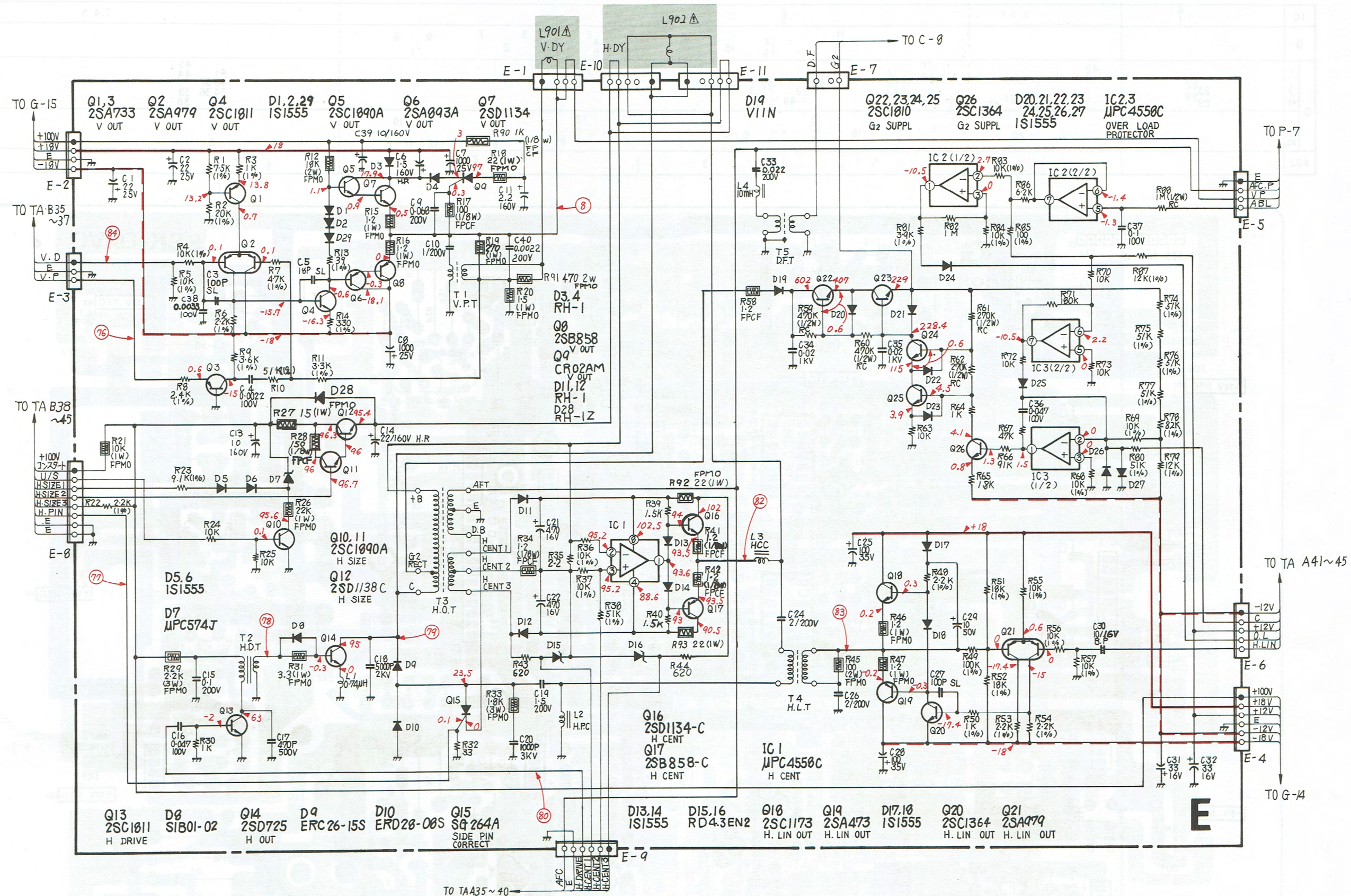


- : Conductor side pattern
- : Component side pattern

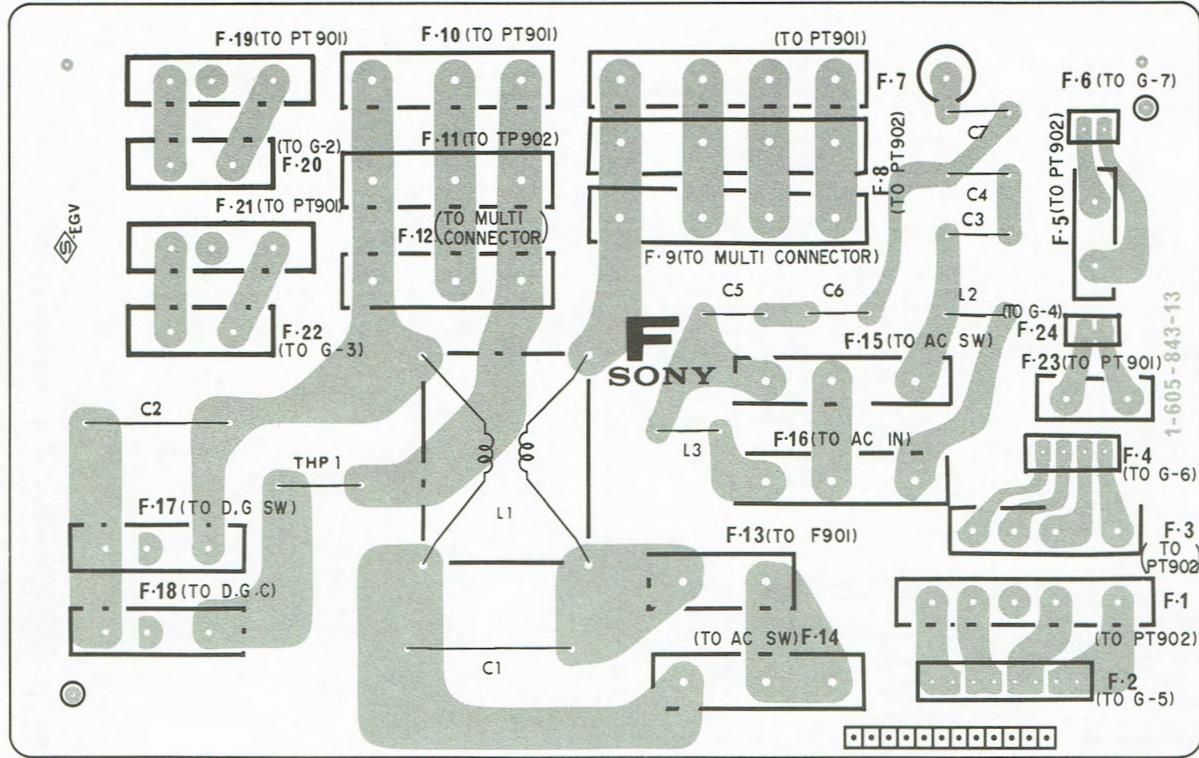


IC											3										2										1																																																																																																																																																																																																							
Q	7										9										5										8										4										3										25										18										26										24										23										19										22										12										11										10										15										14										16										17										13																													
D	3										4										2										1										29										17										23										18										22										21										20										28										7										10										9										19										11										15										16										12										8										14										13									



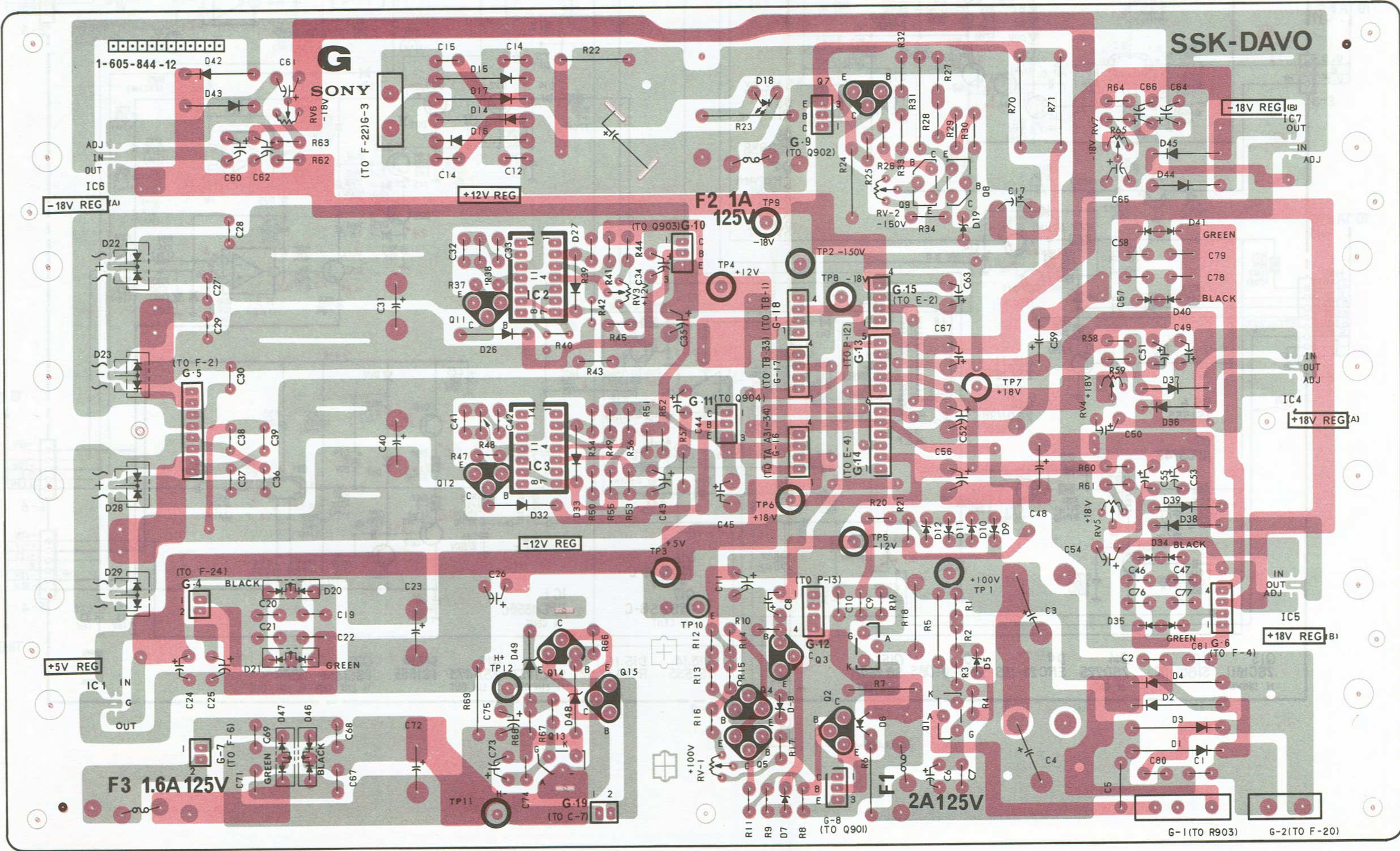


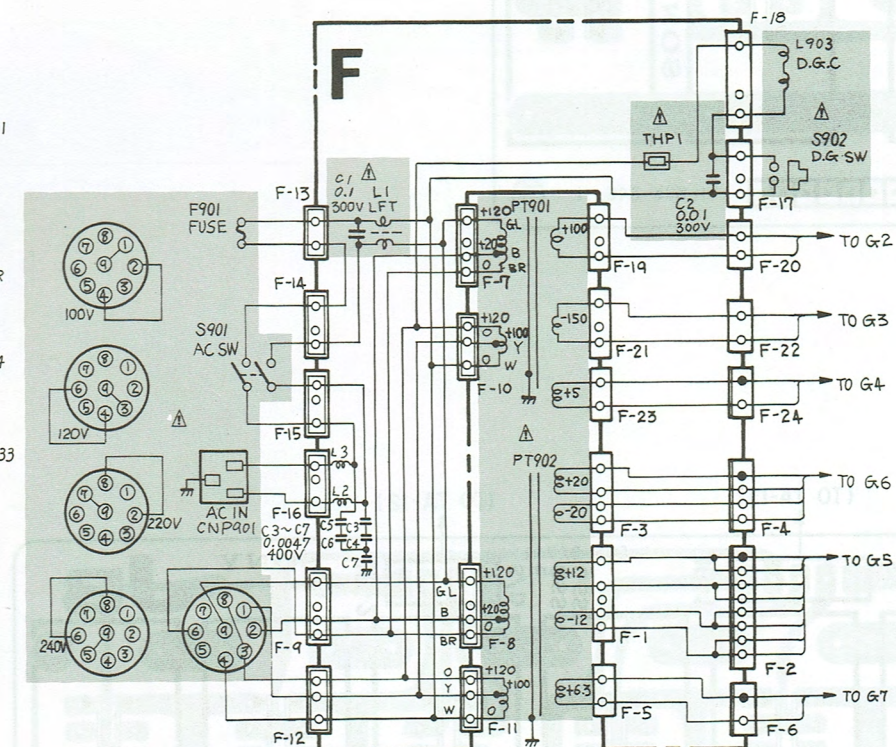
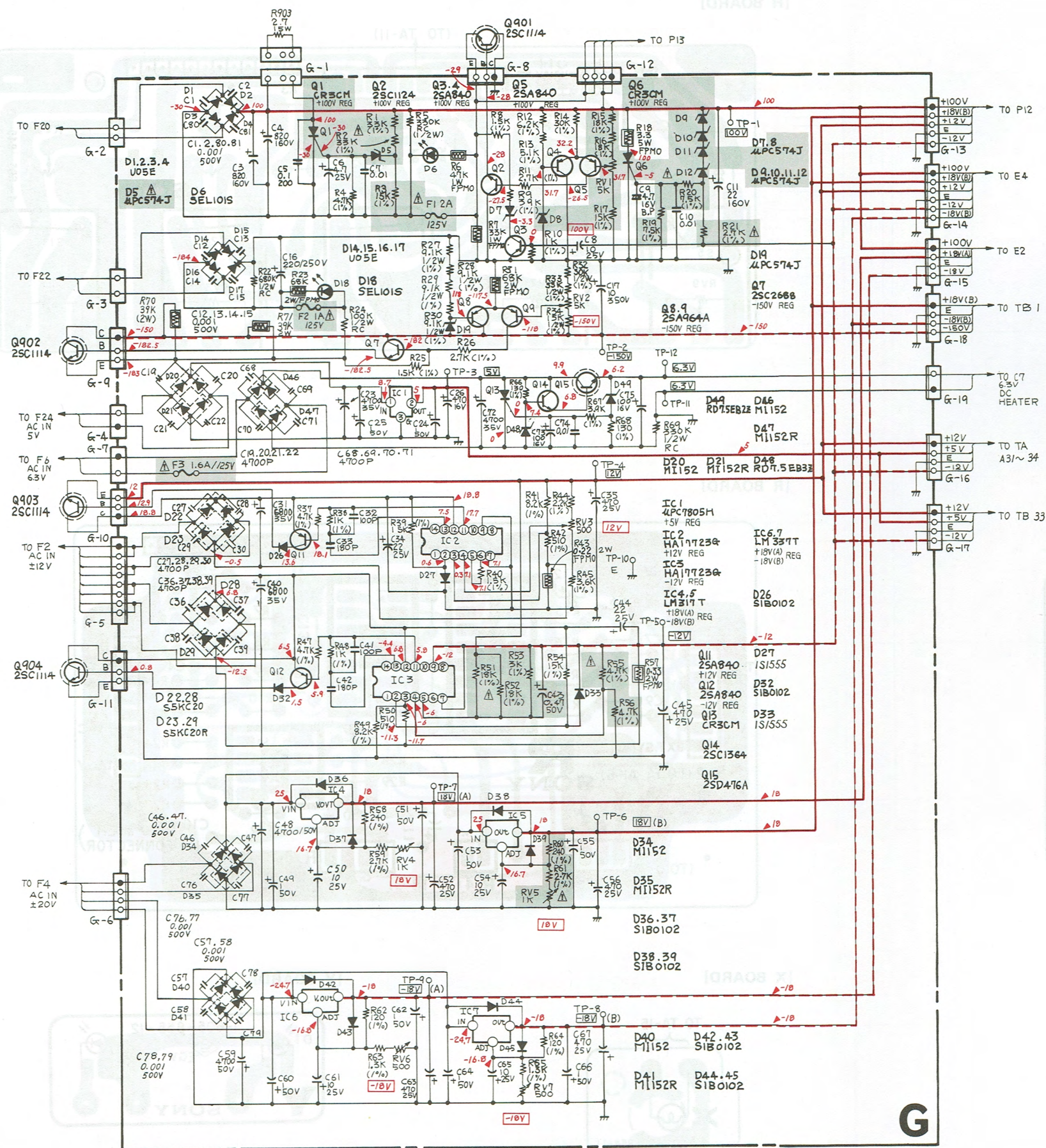
[F BOARD]



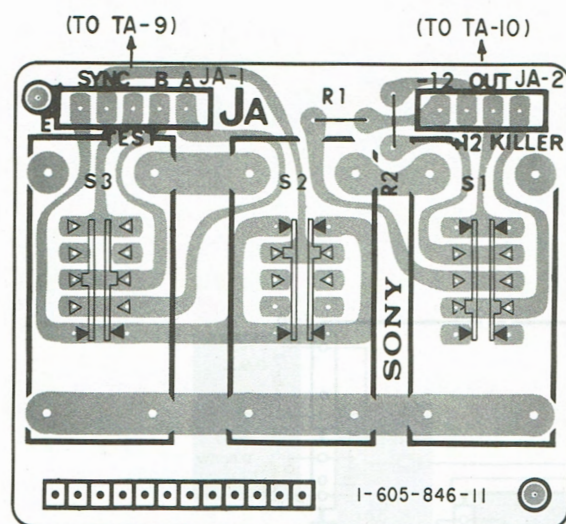
[G BOARD]

IC	6	3	7 4 5
Q	11 12 13 14 15	4 5 6 7 8 9	10 11 12 13 14 15
D	21 22 23 24 25 26 27 28 29	30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45	46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100
ADJ	6	3	5 4 7

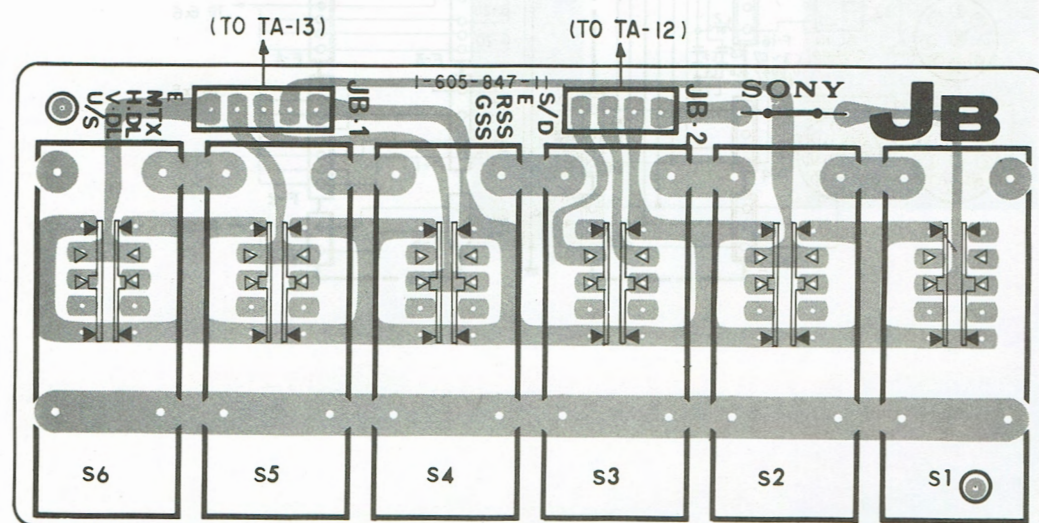




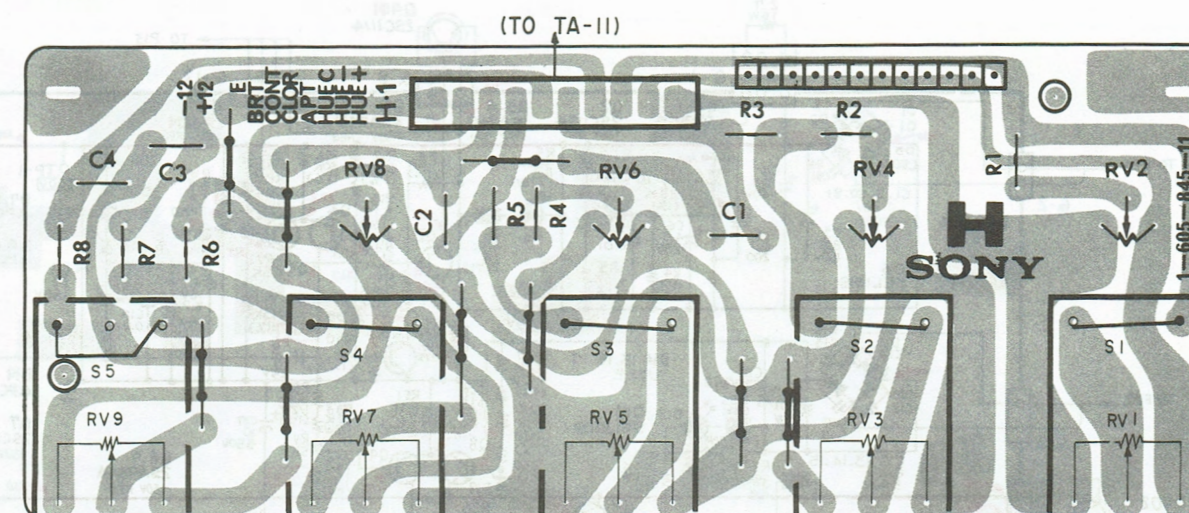
[JA BOARD]



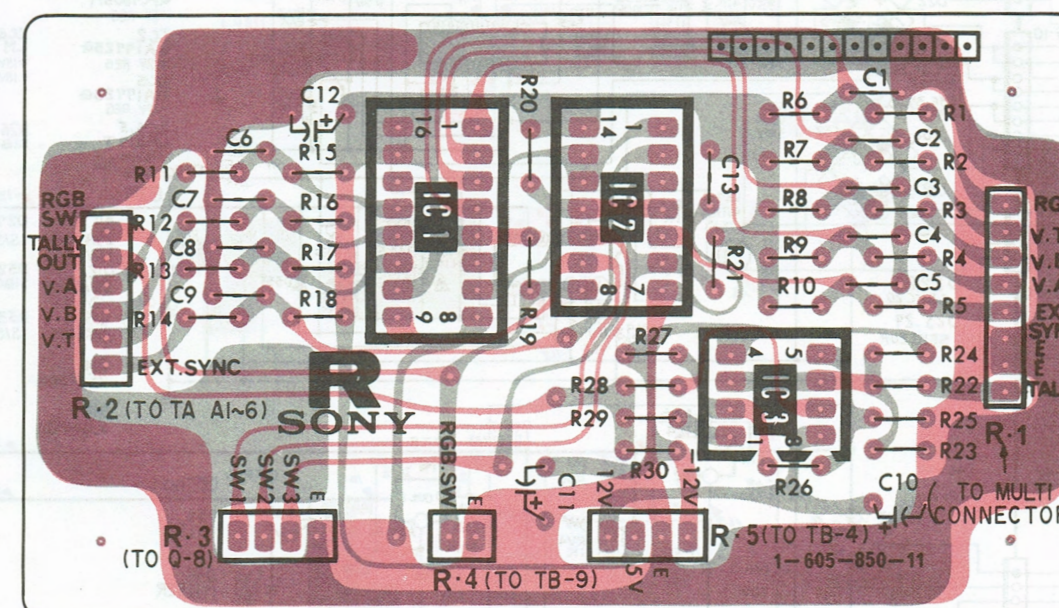
[JB BOARD]



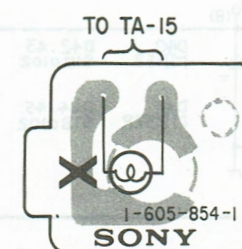
[H BOARD]



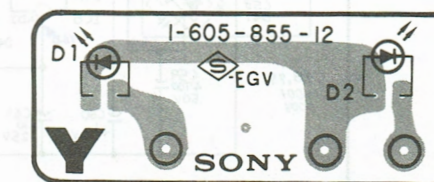
[R BOARD]

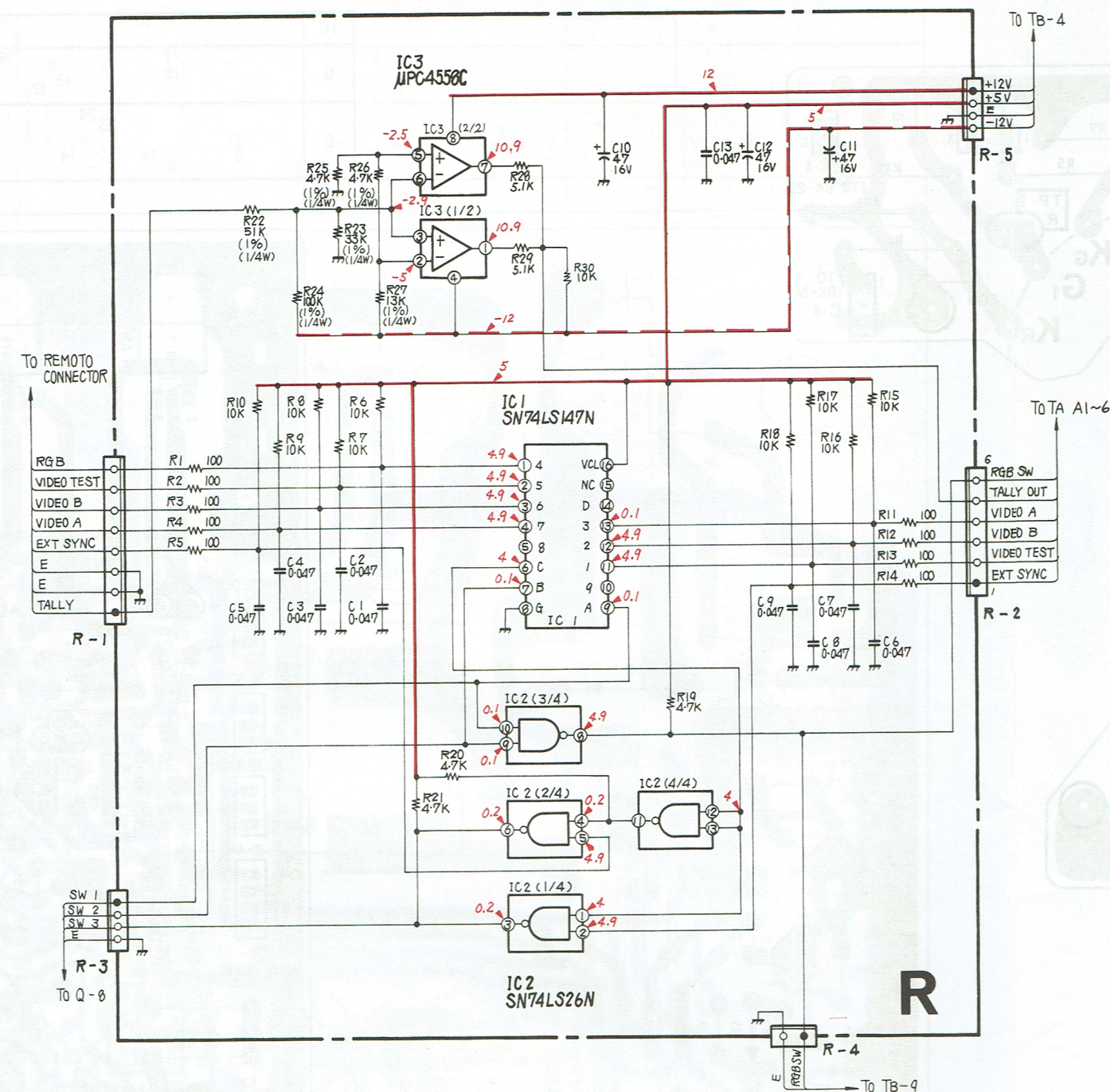
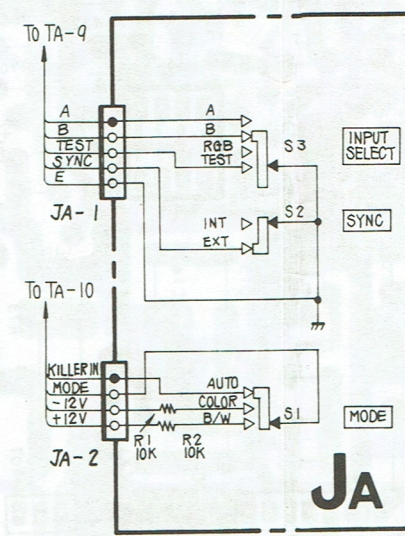
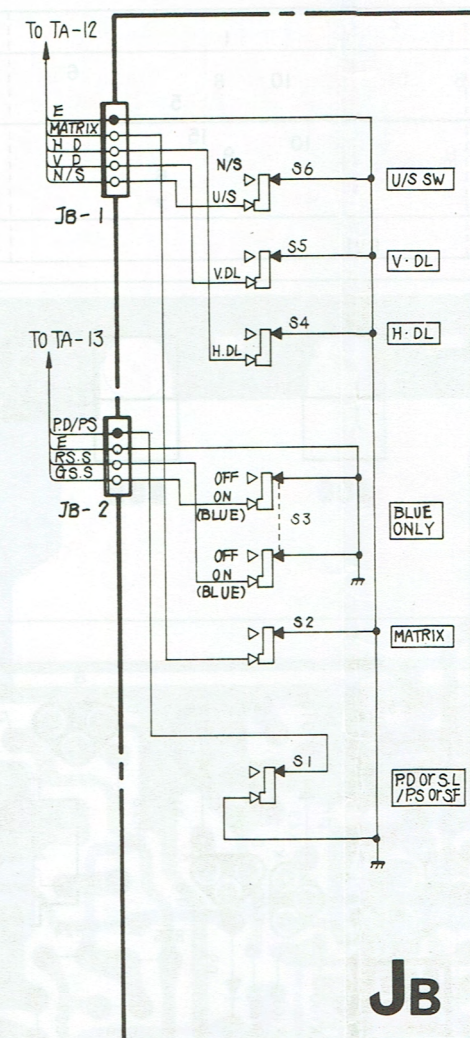
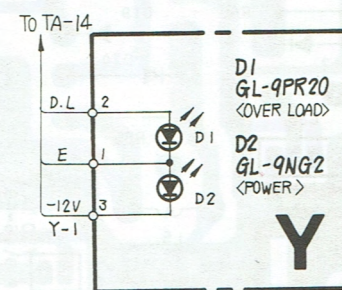
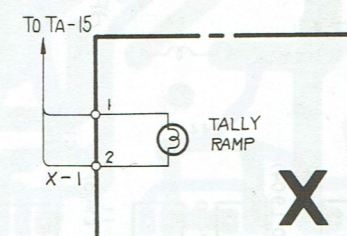
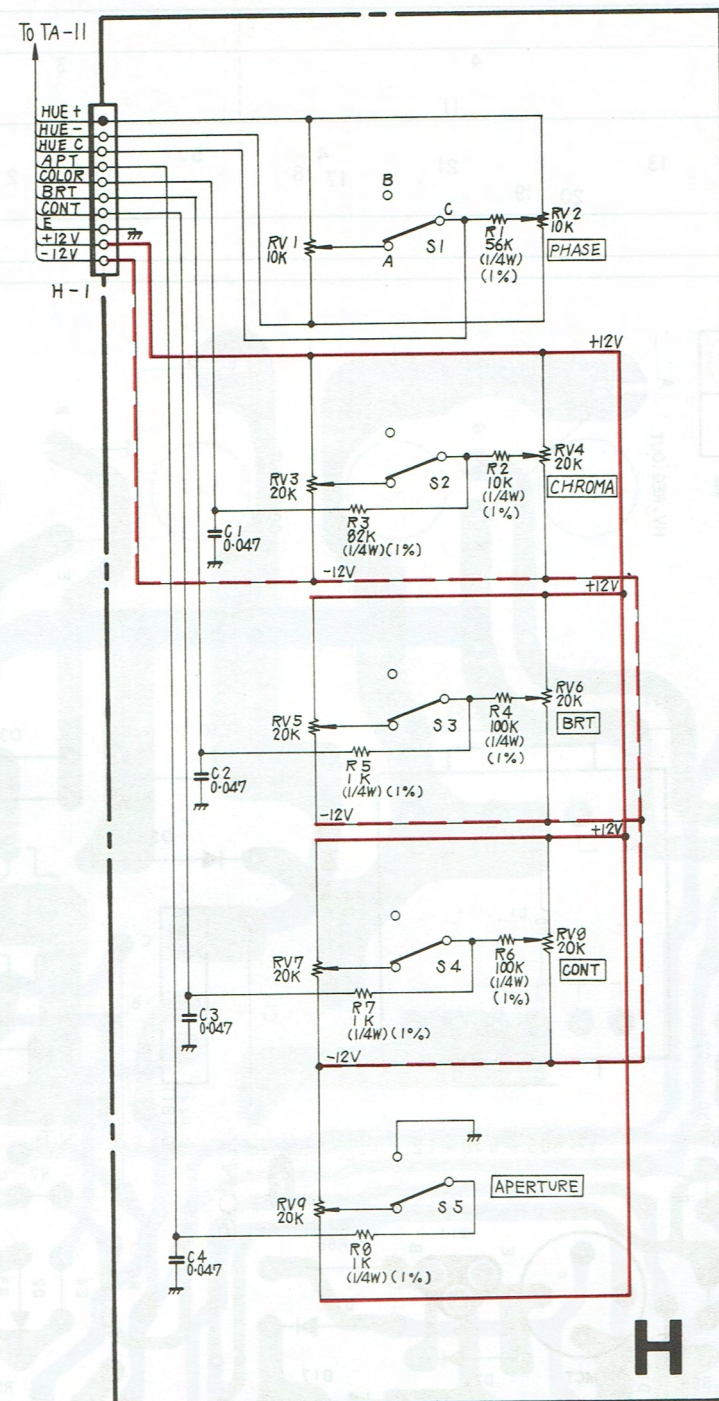


[X BOARD]

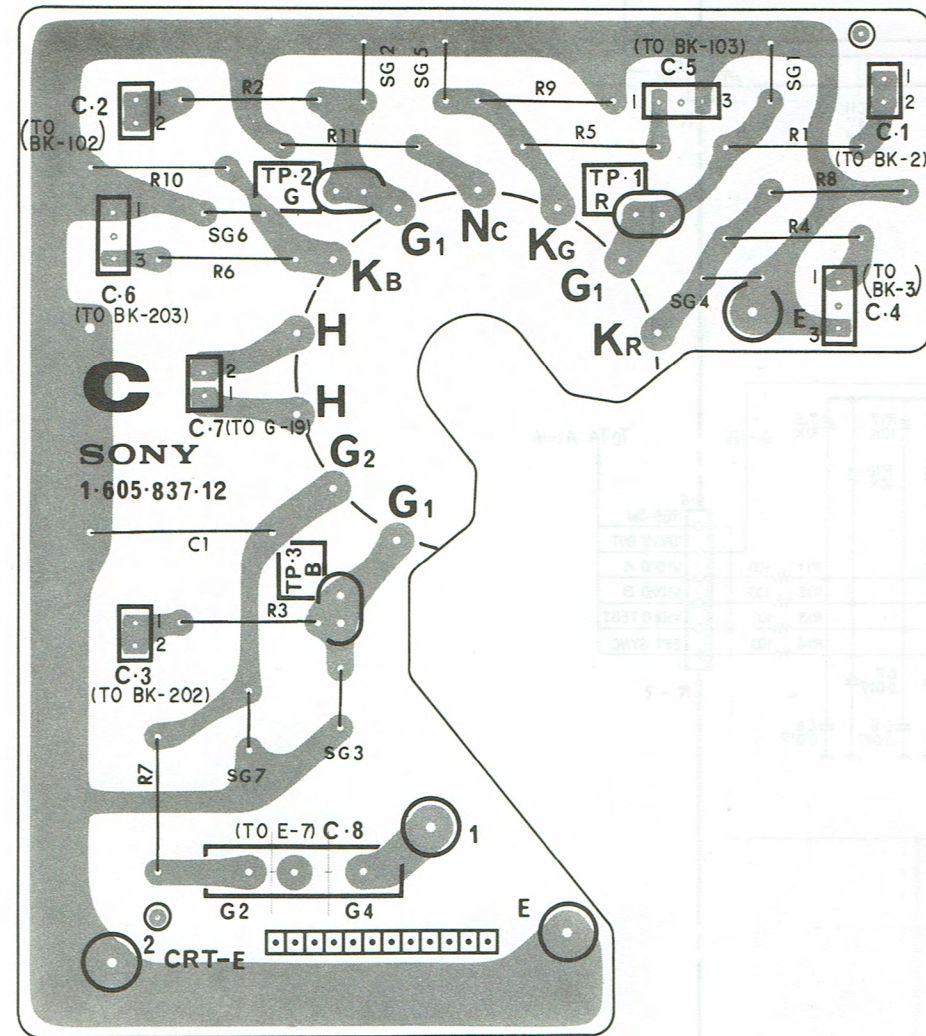


[Y BOARD]



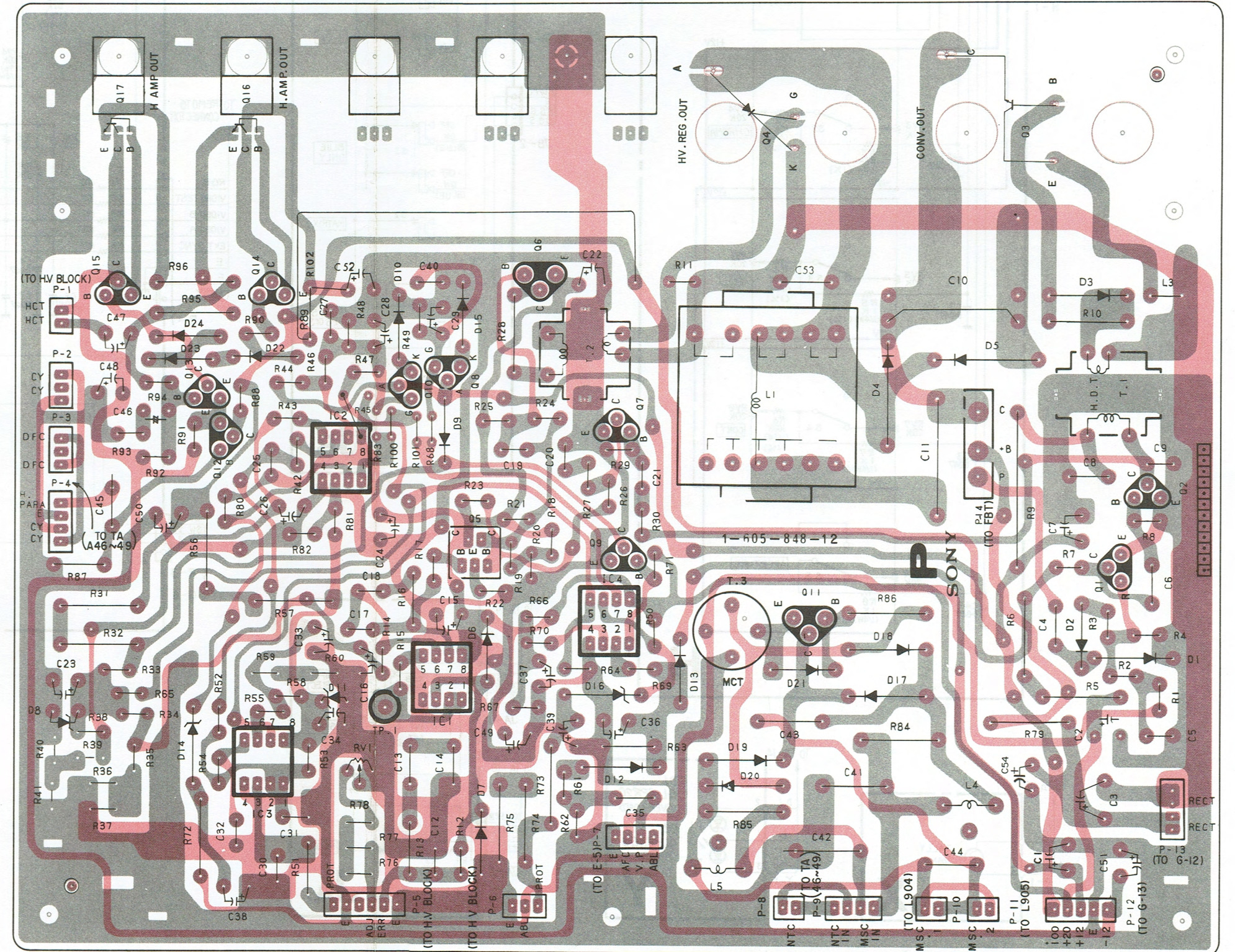




[C BOARD]

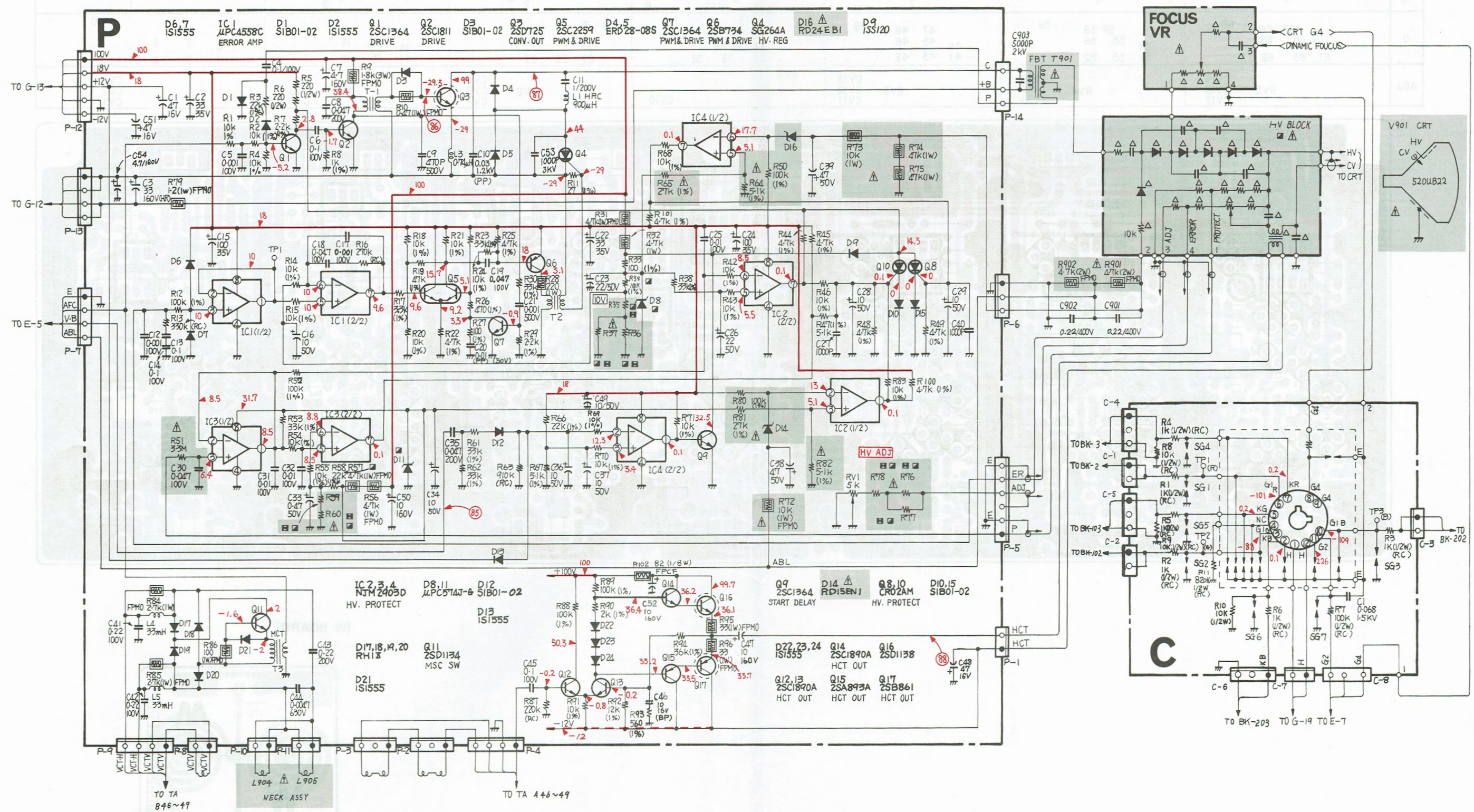


[P BOARD]

IC	3			2			1			4																										
Q	17 15			16 14			10 8 5			6			4 7 9			11			3			1 2														
D	23 ²⁴ 8			22 14			10 9 6 7			15			16 12			13			20 19			21			4 17 18			5			2			3 1		
ADJ							RVI																													

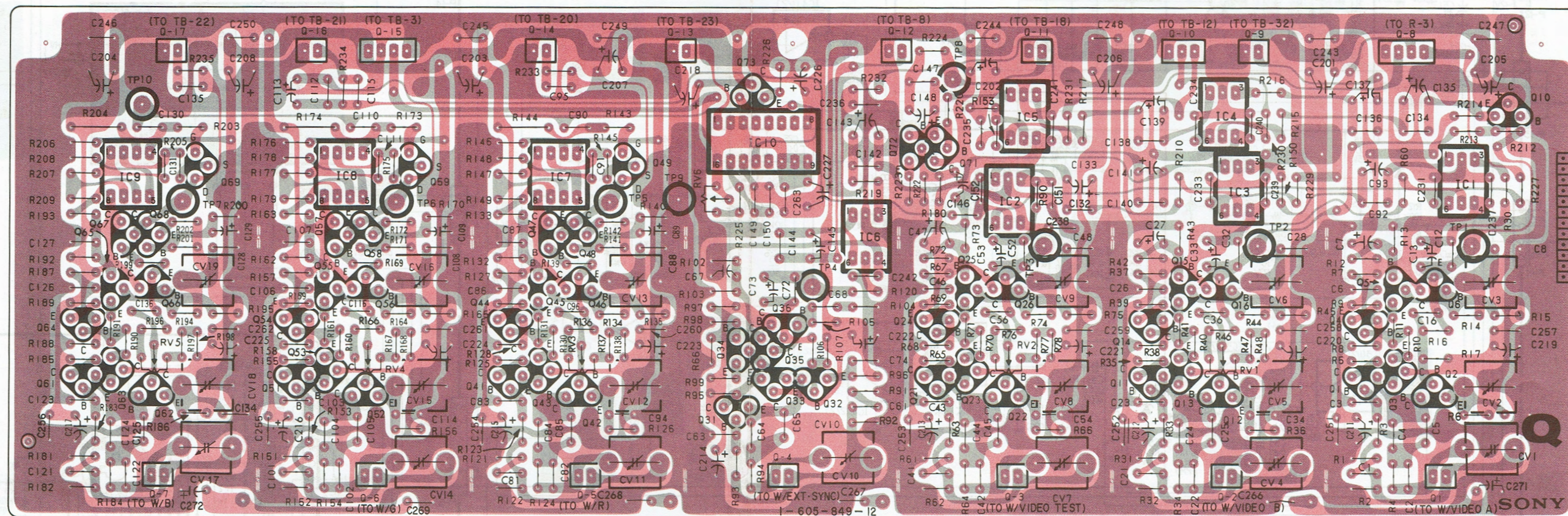


-  : Conductor side pattern
-  : Component side pattern

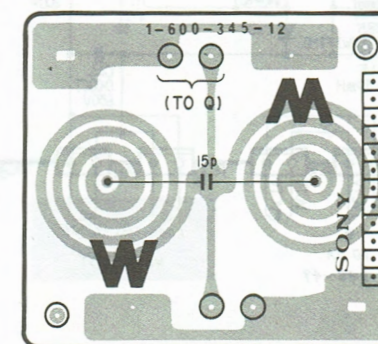


[Q BOARD]

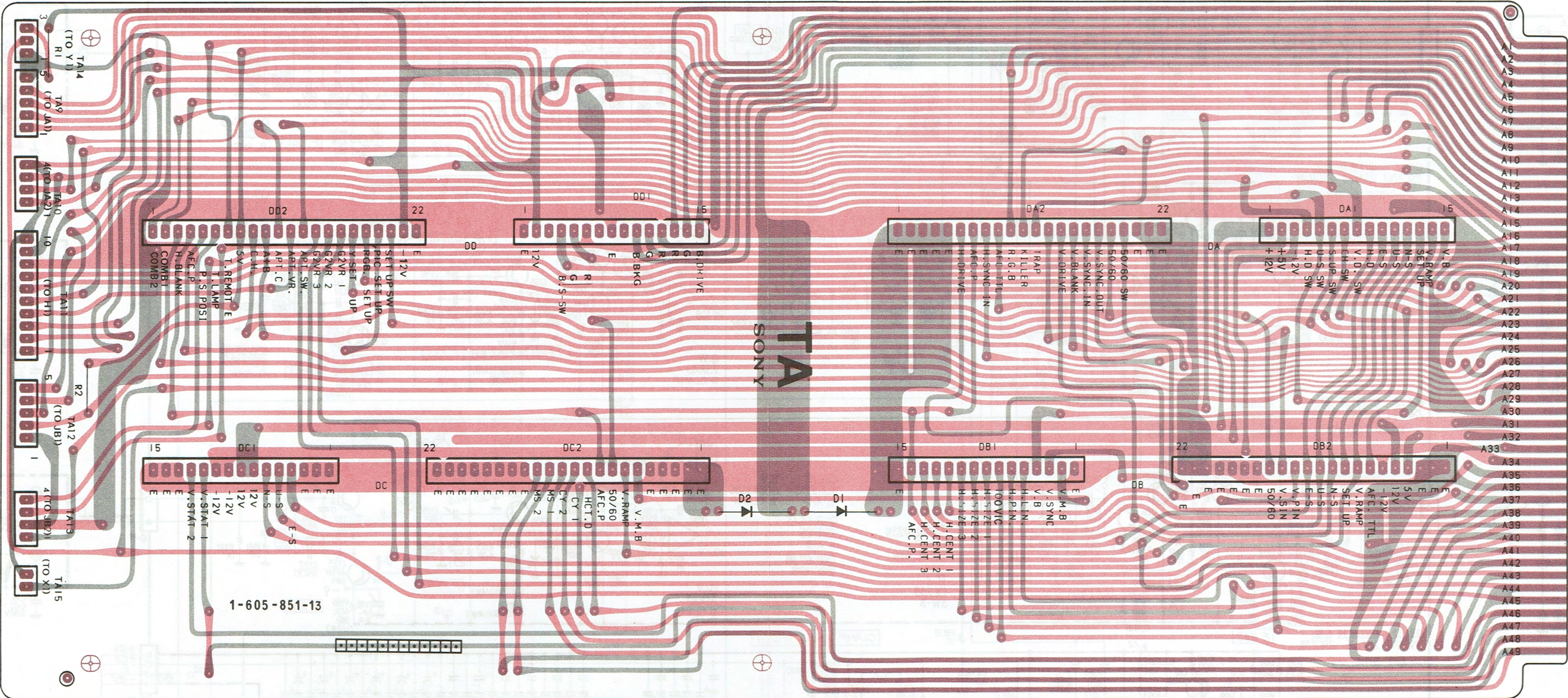
IC	9			8			7			10			6			2 5			4 3			1		
Q	67	68	69	57	58	59	47	48	49	73	72	71	24	25	26	14	15	16	4	5	6	10		
	64	65	66	54	55	56	44	45	46	34	35	36	24	25	26	14	15	16	4	5	6			
	61	63	62	51	53	52	41	43	42	31	33	32	21	23	22	11	13	12	1	3	2			
ADJ	RV5			RV4			RV3			RV6			RV2			RV1						CV3		
	CV19			CV16			CV13			CV10			CV9			CV6						CV2		
	CV18			CV15			CV12						CV8			CV5						CV1		
	CV17			CV14			CV11						CV7			CV4								



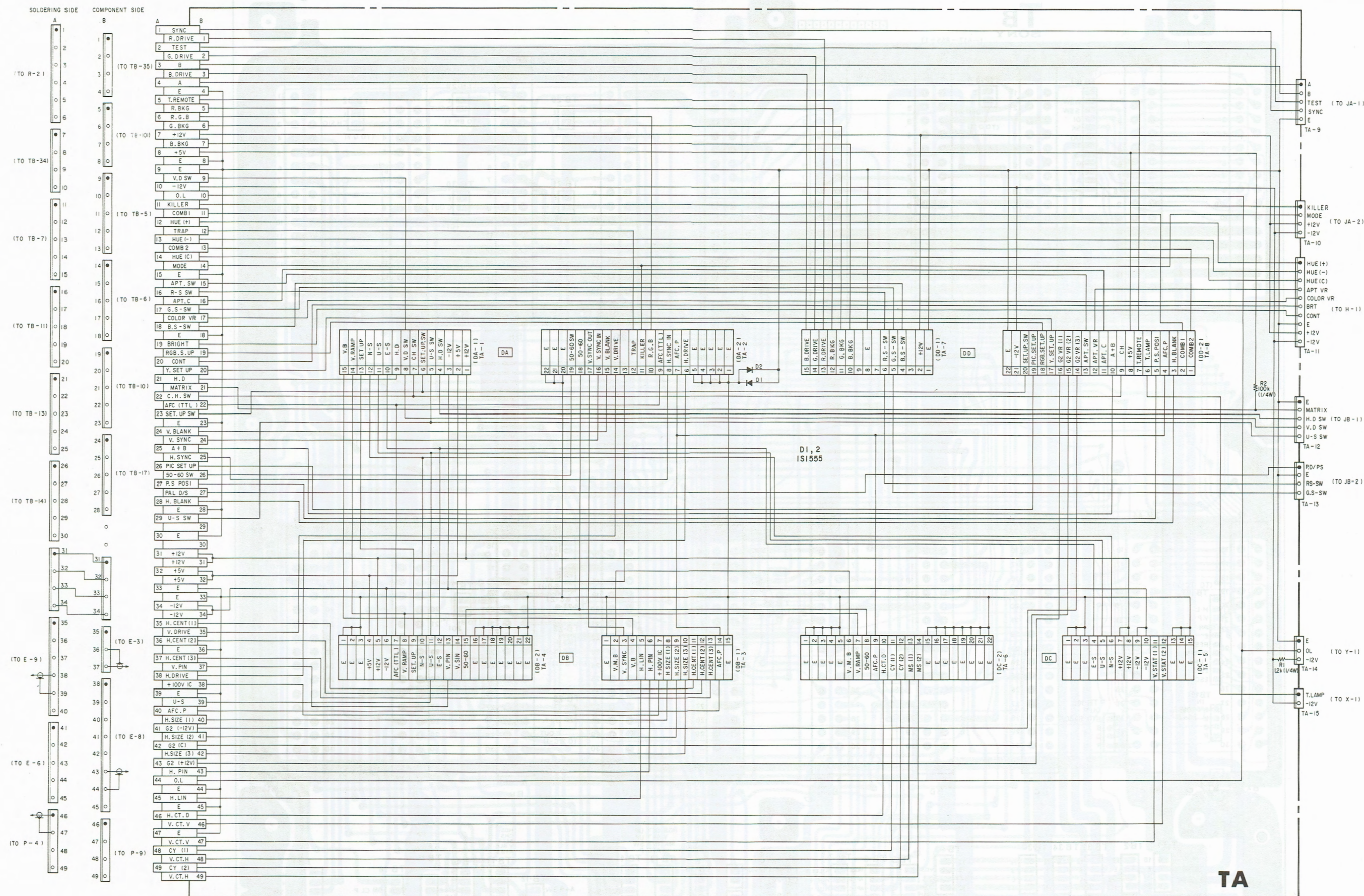
[W BOARD]

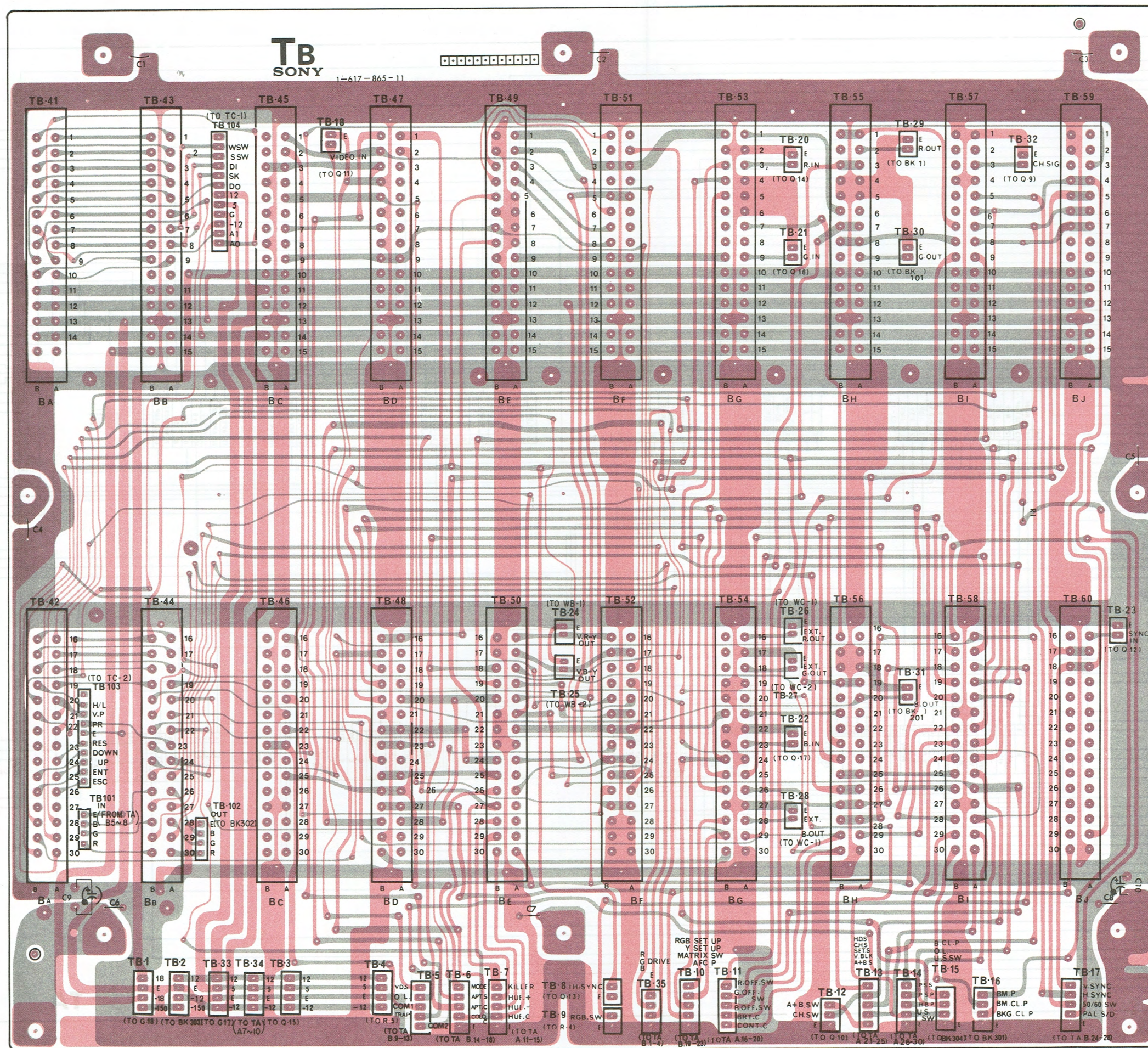


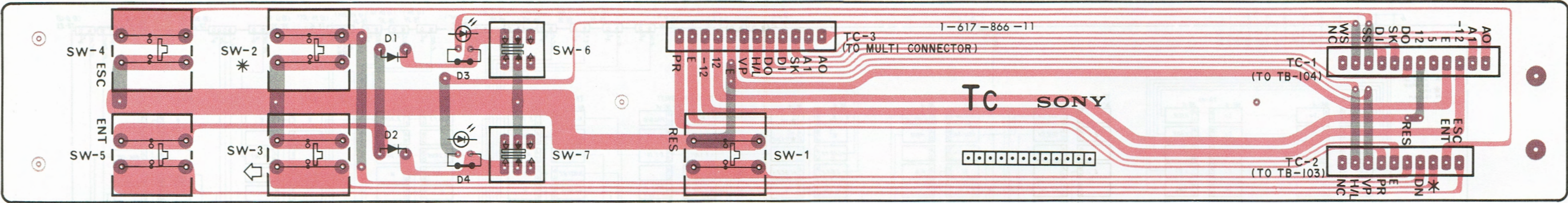




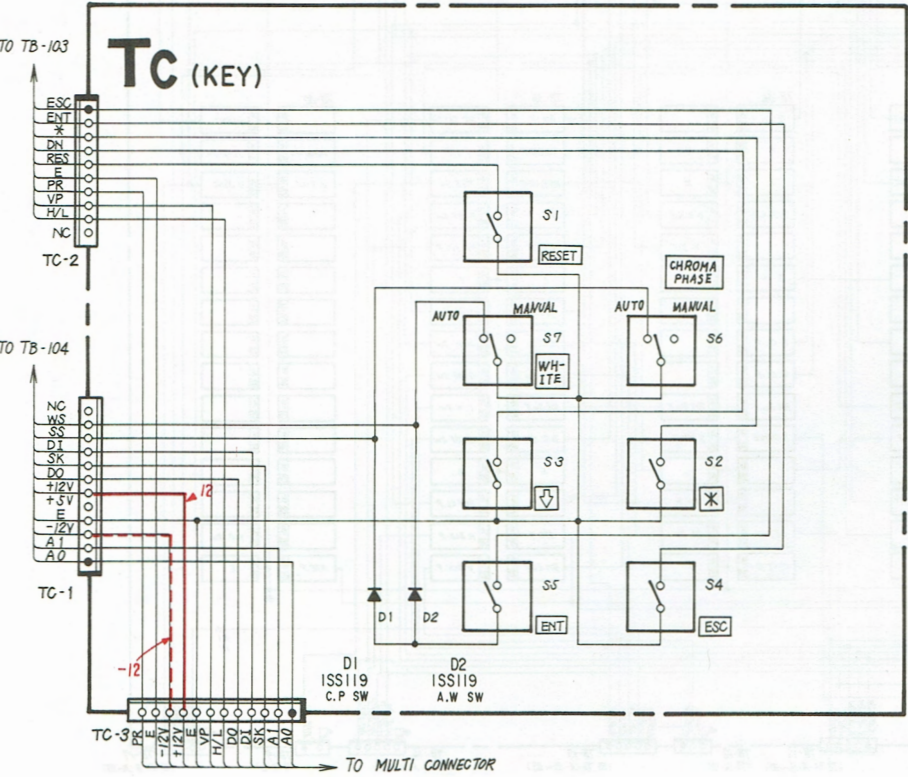
● : Conductor side pattern
● : Component side pattern

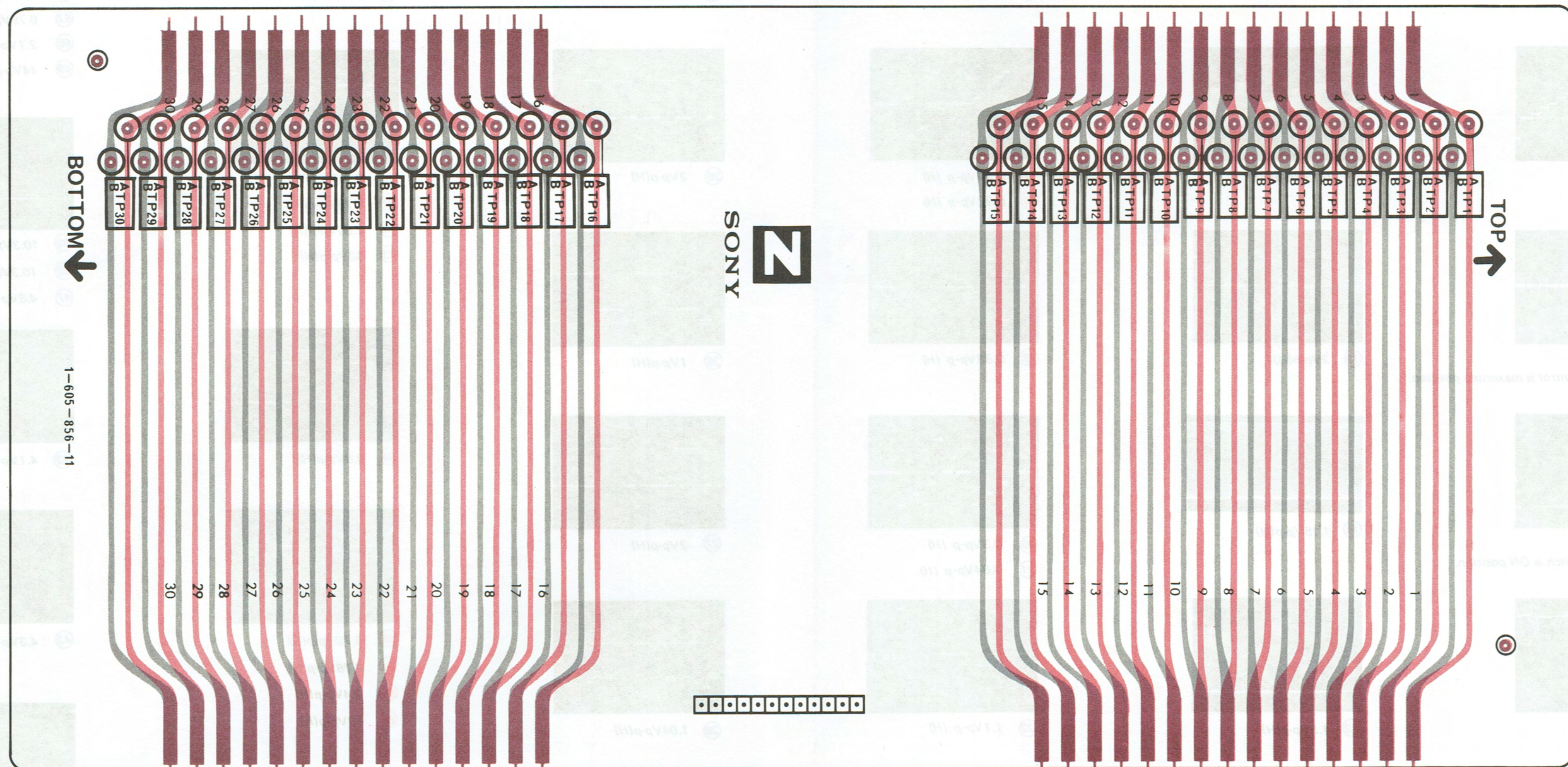






[TC BOARD]

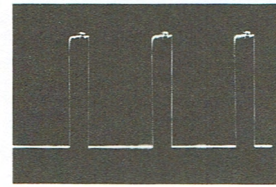




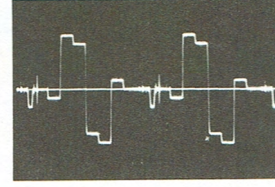
5-4. WAVEFORMS



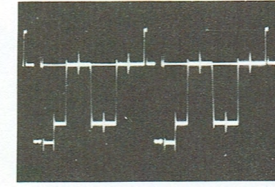
① 0.14Vp-p(H)



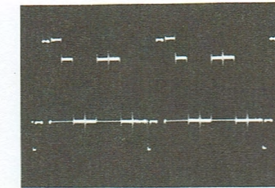
⑦ 4.4Vp-p(H)



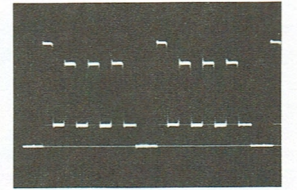
⑯ 0.66Vp-p(H)



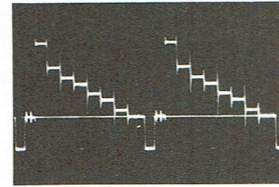
②④ 1.05Vp-p(H)



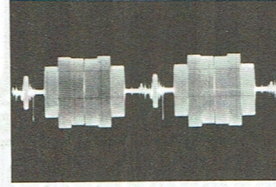
③① 0.82Vp-p(H)



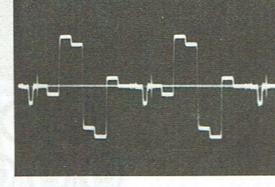
③⑧ 0.76Vp-p(H)



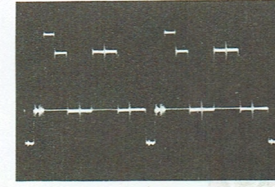
② 1.05Vp-p(H)



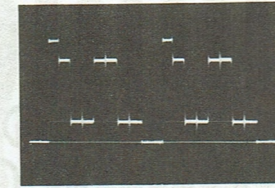
⑨ 0.13Vp-p(H)



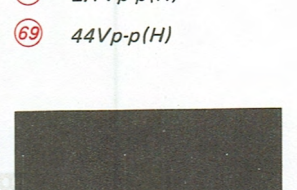
⑰ 0.34Vp-p (H)



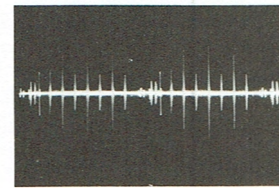
②⑤ 2Vp-p(H)



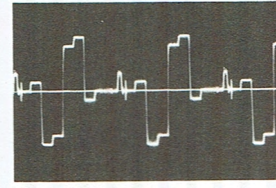
③② 0.76Vp-p(H)



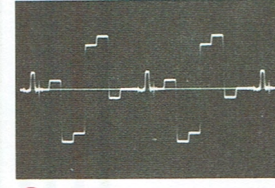
⑥⑦ 0.76Vp-p(H)



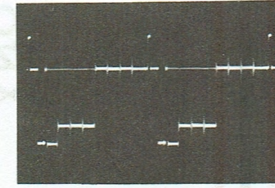
③ 0.18Vp-p(H)
APERTUR control is maximum position.



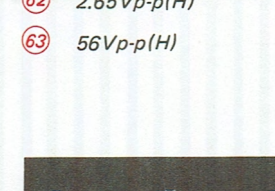
⑩ 2Vp-p(H)



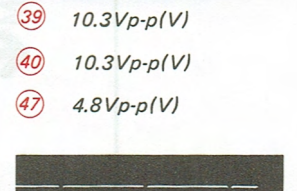
⑰⑨ 0.88Vp-p (H)



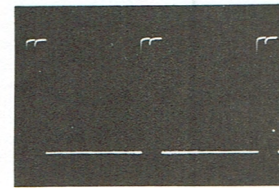
②⑥ 1Vp-p(H)



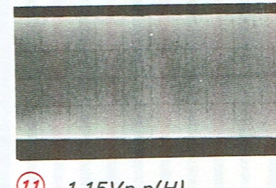
⑥① 0.76Vp-p(H)



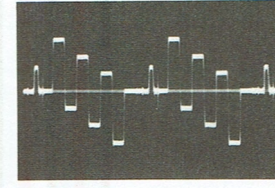
③⑨ 10.3Vp-p(V)



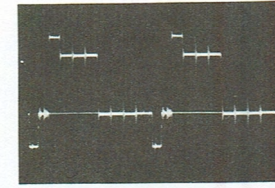
④ 4.2Vp-p(H)
DELAY-H switch is ON position.



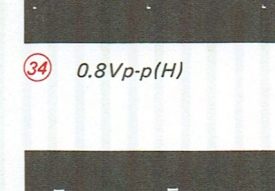
⑪ 1.15Vp-p(H)



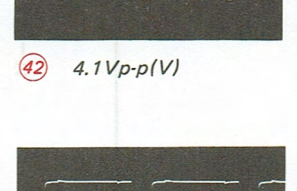
②⑩ 0.3Vp-p (H)



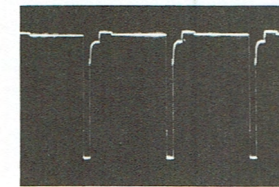
②⑦ 2Vp-p(H)



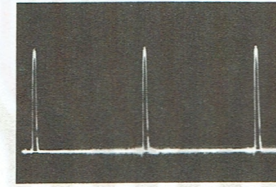
③④ 0.8Vp-p(H)



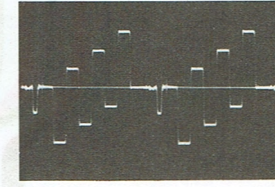
④② 4.1Vp-p(V)



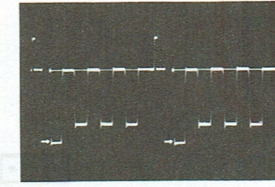
⑤ 4.9Vp-p(H)



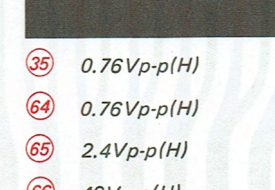
⑫ 1.5Vp-p(H)



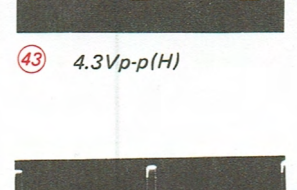
②② 1.1Vp-p (H)



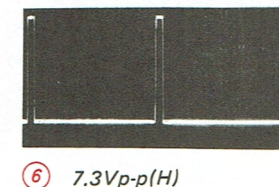
②⑧ 1.04Vp-p(H)



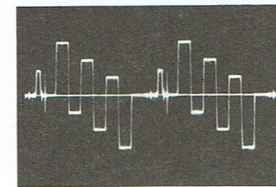
③⑤ 0.76Vp-p(H)



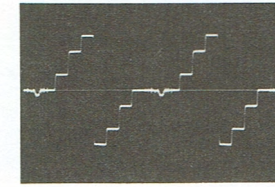
④③ 4.3Vp-p(H)



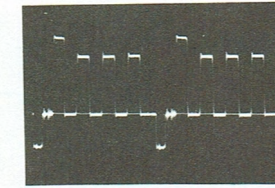
⑥ 7.3Vp-p(H)



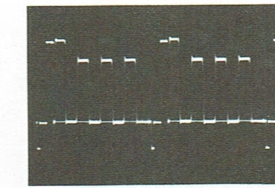
⑭ 0.56Vp-p(H)



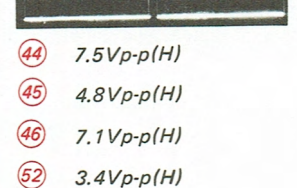
②③ 0.52Vp-p (H)



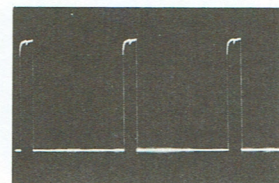
②⑨ 2Vp-p(H)



③⑦ 0.8Vp-p(H)



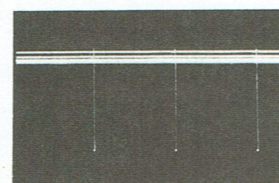
④④ 7.5Vp-p(H)



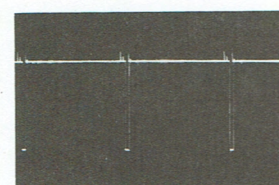
48 4.3Vp-p(H)

50 4.8Vp-p(H)

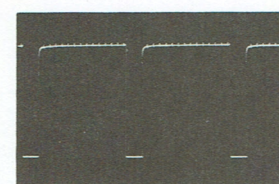
53 4.3Vp-p(H)



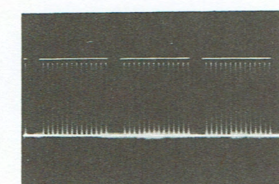
49 4.6Vp-p(V)



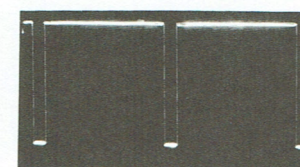
51 3.4Vp-p(H)



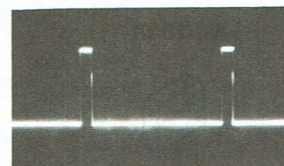
54 4.3Vp-p(H)
C-H switch (S10 and S11 on DD board) on



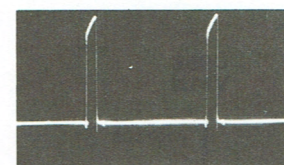
55 0.6Vp-p(H)
C-H switch (S10 and S11 on DD board) on



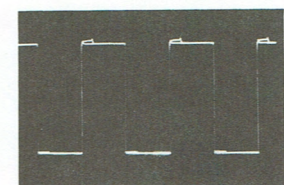
56 5Vp-p(H)



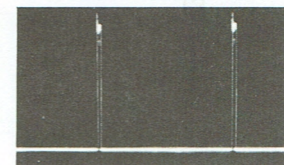
57 3.4Vp-p(H)



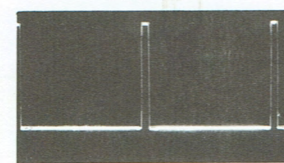
58 4Vp-p(V)



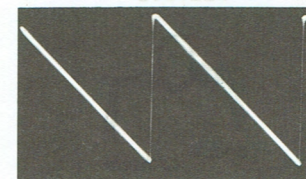
59 4.3Vp-p(H)



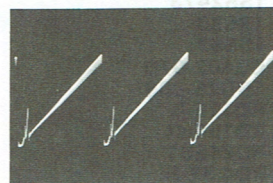
60 3.7Vp-p(V)



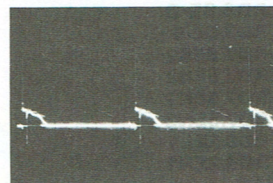
70 7.6Vp-p(H)



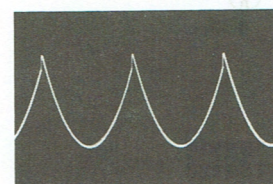
71 12Vp-p(V)



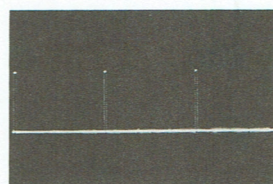
72 1.3Vp-p(H)



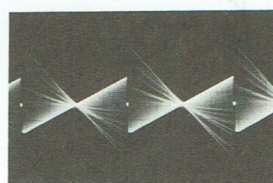
73 6.8Vp-p(H)



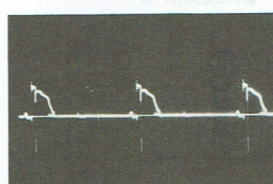
74 3.2Vp-p(V)



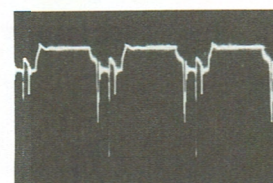
75 11Vp-p(V)



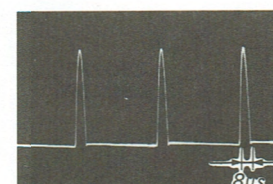
76 2.2Vp-p(V)



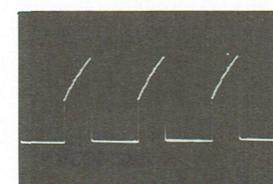
77 3.4Vp-p(V)



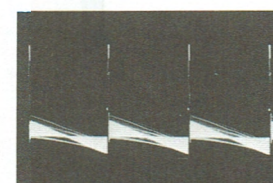
78 21Vp-p(H)



79 1140Vp-p(H)

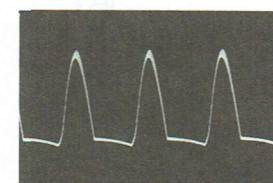


80 6.5Vp-p(H)

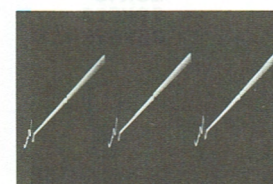


81 68Vp-p(H)

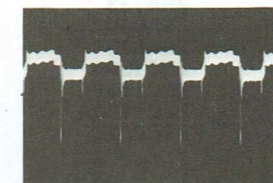
85 68Vp-p(H)



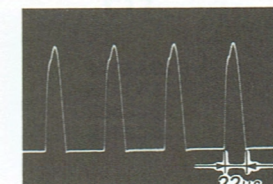
82 7Vp-p(H)



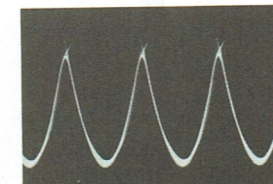
83 17Vp-p(H)



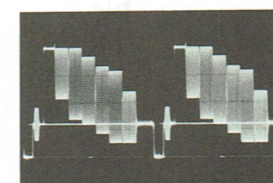
86 14.5Vp-p(H)



87 520Vp-p(H)



88 60Vp-p(H)



89 1.05Vp-p(H)

90 1.05Vp-p(H)
input switch B position

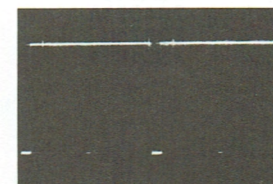
91 1.05Vp-p(H)
input switch TEST position

93 1.05Vp-p(H) } input switch RGB position

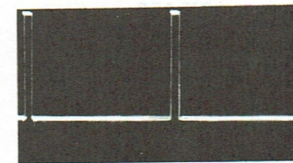
94 1.05Vp-p(H) }

95 1.05Vp-p(H) }

96 0.95Vp-p(H) }



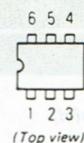
92 0.6Vp-p(H)
composite sync signal input and
SYNC switch: EXT position



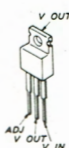
97 4Vp-p(H)

5-5. SEMICONDUCTORS

CX-130
TX-429M



LM317T



2SA1005
2SA1164
2SA733
2SA844
2SA925
2SC1364
2SC1636
2SC1890A
2SC2878



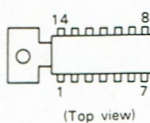
2SA979
2SC2259



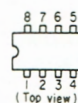
2SC1810



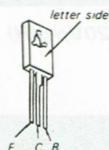
CX-158
CX-718D-1



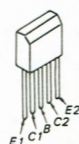
LM318P
NJM2903D
TL082CP
 μ PC1555C
 μ PC311C
 μ PC4558C



2SA1142
2SA1156
2SC2682
2SC2688



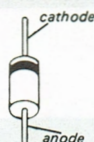
2SA995



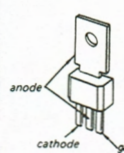
2SC2213
2SC2901



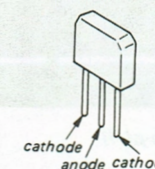
1S1555
1S2076
1SS2473
1SS88
1SS97
EQA02-07D
ERD28-08S
RD12E-B
RD15EN1
RD24EB1
RD4.3E-B
RD4.3EN1
RD4.3EN2
RD4.3EN3
RD4.7EB2
RD5.1E-B
RD6.8E-B
RD7.5E-B
RD7.5EB2
RD7.5EB3
RD7.5EN2
RD7.5EN3
RD8.2EL1
RD8.2EN1



CR3CM-8



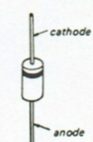
MI-152R



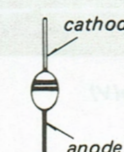
SG-264A



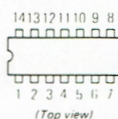
EQA01-15R



U05E
V11N



HA17723G
MC1495L
SN74LS00N
SN74LS04N
SN74LS10N
SN74LS122N
SN74LS125AN
SN74LS20N
SN74LS26N
SN74LS73AN
SN74LS93N
SN7406N
TA7158P
 μ A733CN
 μ PC562C



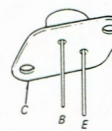
LM337T



2SA1221
2SB734
2SD773



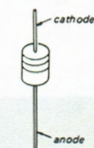
2SC1114
2SD725



2SC403SP



1SS119
1SS120



ERC26-15S



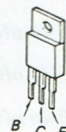
RH-1
RH-1Z
RU-1A
SIB01-02



μ PC574J
 μ PC574J-G



2SA473
2SB858
2SB861
2SC1173
2SD1134
2SD1138
2SD476A



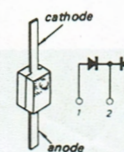
2SC1124



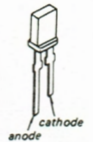
2SC403C
2SC634



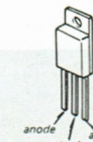
1T-25



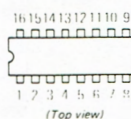
GL-9NG2
GL-9PR20



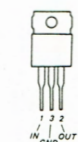
S5KC20
S5KC20R



HD74LS157P
SN74LS123N
SN74LS147N
SN74LS157N
SN74LS158N
SN74LS175N
SN74LS279N
TC4053BP
TL8608BP



μ PC7805H



2SA840
2SA893A
2SB740
2SC1811



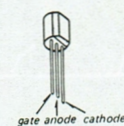
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2SC2009
2SC2471



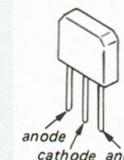
2SK43
2SK523
2SK523-M1



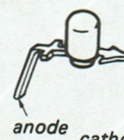
CR02AM-4



MI-152



SEL101S



SECTION 6 EXPLODED VIEWS

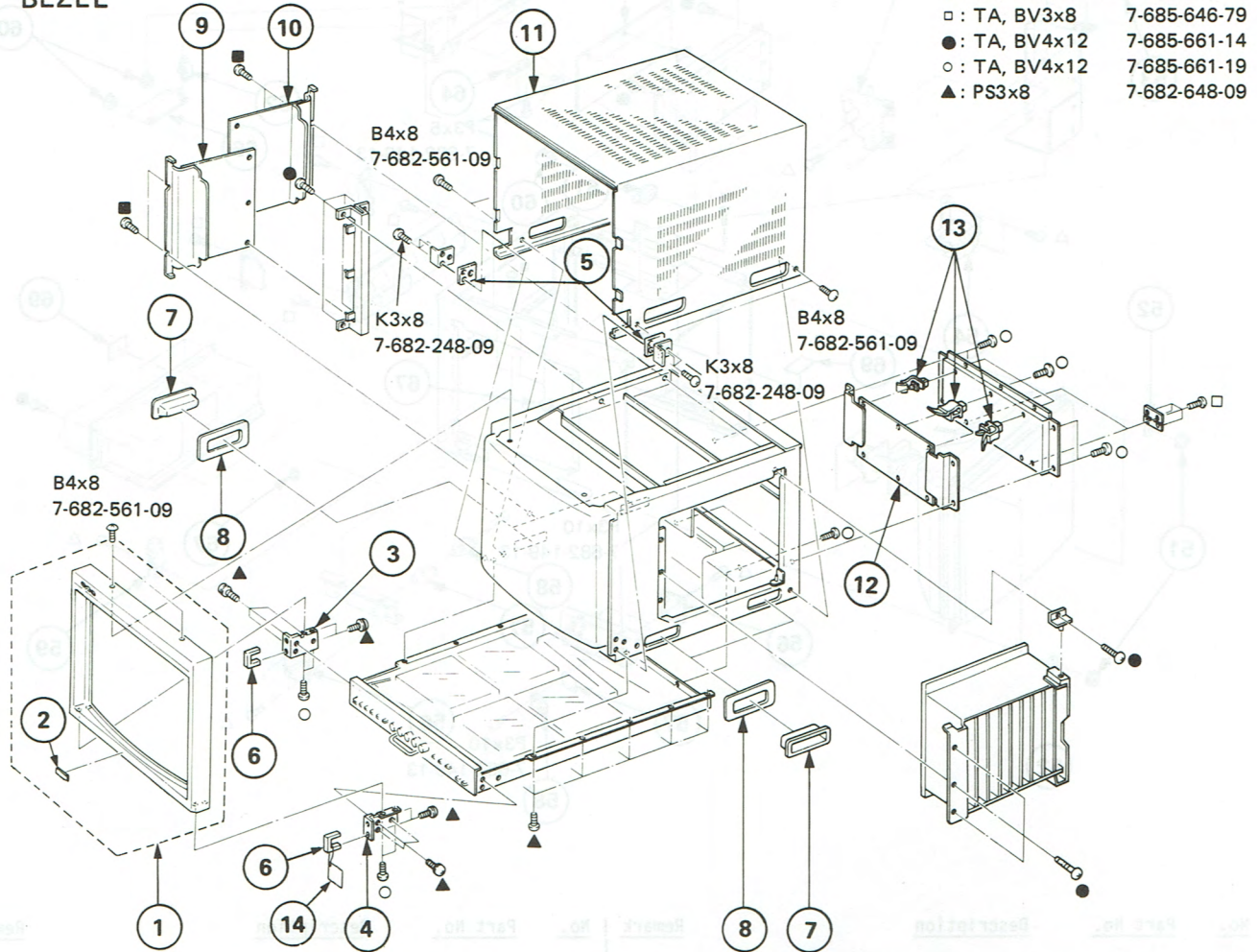
NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

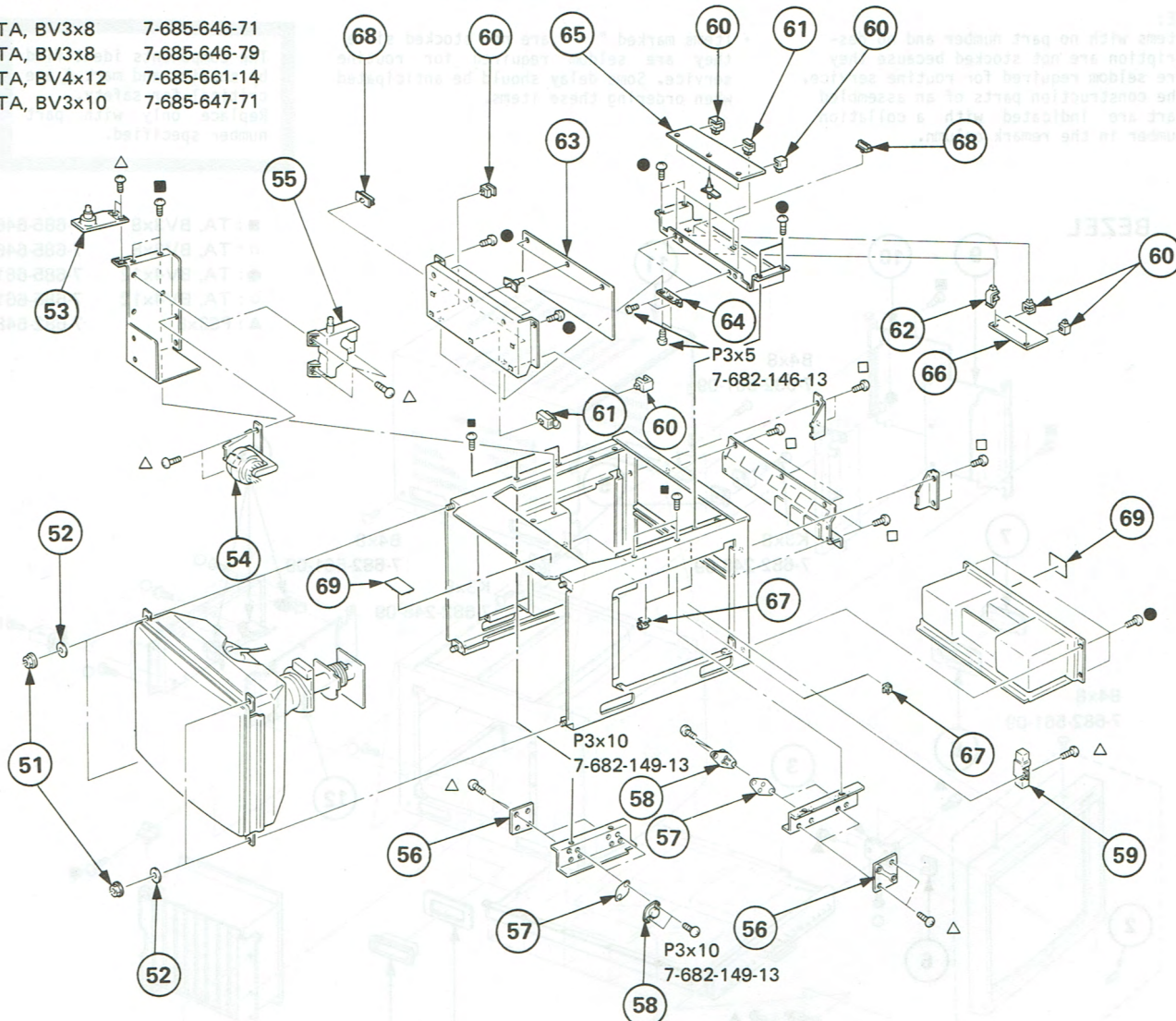
(1) BEZEL



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
1	X-4353-704-4	BEZEL ASSY		8	*4-353-718-00	PLATE, COVER	
2	3-548-973-00	EMBLEM, SONY	2	9	*A-1195-005-A	P BOARD, COMPLETE	
3	*4-353-741-00	BRACKET (LEFT)		10	*A-1345-331-A	E BOARD, COMPLETE	
4	*4-353-740-00	BRACKET (RIGHT)		11	*4-353-768-00	COVER	
5	*4-353-777-00	SHEET, BLIND		12	*A-1316-017-A	G BOARD, COMPLETE	
6	*4-353-706-00	HANDLE		13	*3-703-141-00	HOLDER, PCB	
7	4-321-604-23	HANDLE		14	4-491-502-11	TAG, HANG, VOLTAGE INDICATION	

(2) CHASSIS

- : TA, BV3x8 7-685-646-71
 □ : TA, BV3x8 7-685-646-79
 ● : TA, BV4x12 7-685-661-14
 △ : TA, BV3x10 7-685-647-71

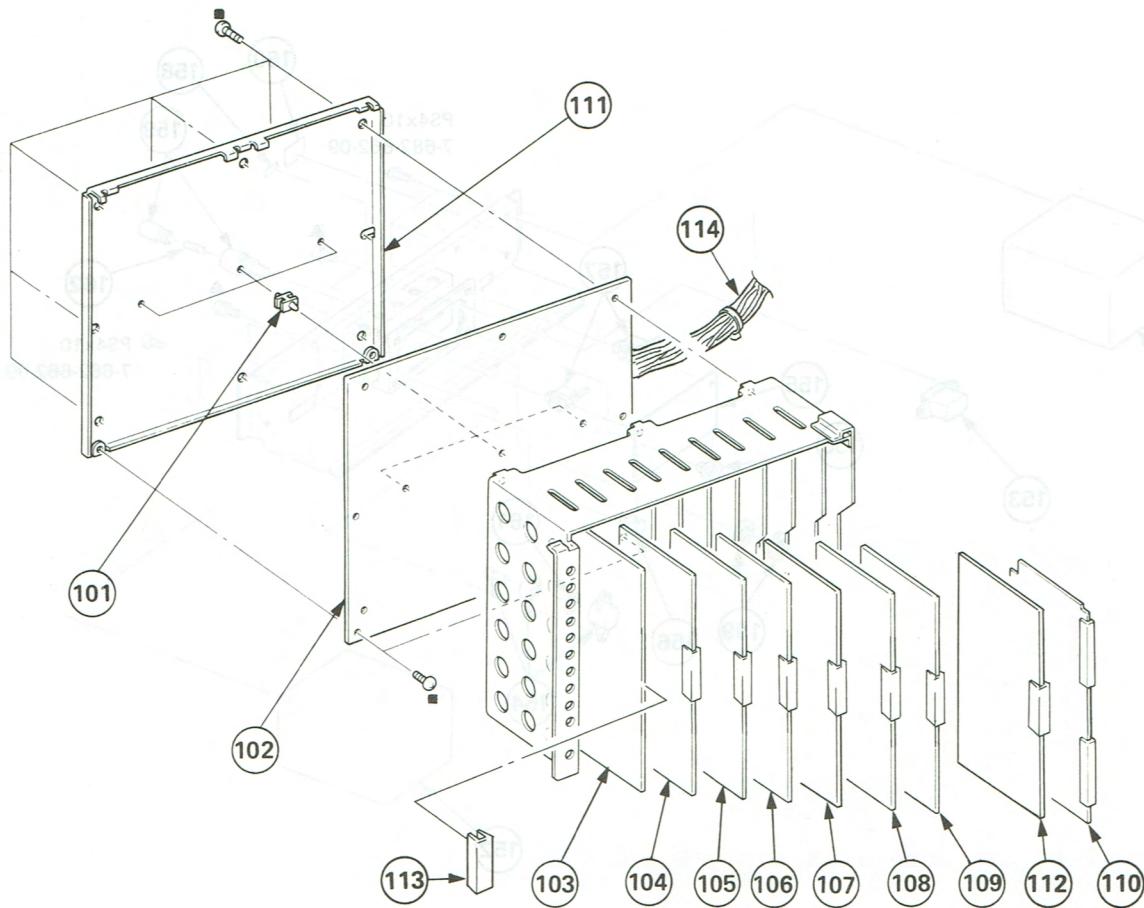


No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
51	4-306-034-00	FLANGE NUT, (B) 5MM		61	*3-659-682-00	HOLDER, PC BOARD	
52	*4-005-459-00	WASHER		62	*3-703-141-00	HOLDER, PCB	
53	△.1-453-091-11	HIGH-VOLTAGE DC BLOCK		63	*A-1135-143-A	BK BOARD, COMPLETE	
54	△.1-439-284-11	TRANSFORMER ASSY, FLYBACK		64	*3-658-816-00	HINGE, FRONT	
55	△.1-228-516-11	RESISTOR ASSY, HIGH-VOLTAGE		65	*A-1275-036-A	Q BOARD, COMPLETE	
56	1-509-437-00	SOCKET, POWER TRANSISTOR		66	*1-605-850-00	R BOARD	
57	2-825-002-11	SPACER		67	3-621-212-21	CLAMP, DKN	
58	8-729-311-42	TRANSISTOR 2SC1114		68	*3-642-310-00	HOLDER, CIRCUIT BOARD	
59	1-217-183-00	RES, WIREWOUND 2.7 10% 15W		69	*4-357-003-00	LABEL, PTB	
60	*3-701-903-00	HOLDER, PC BOARD					

The components identified by shading and mark △ are critical for safety. Replace only with part number specified.

(3) TB BLOCK

■ : TA, BV3x8 7-685-646-71

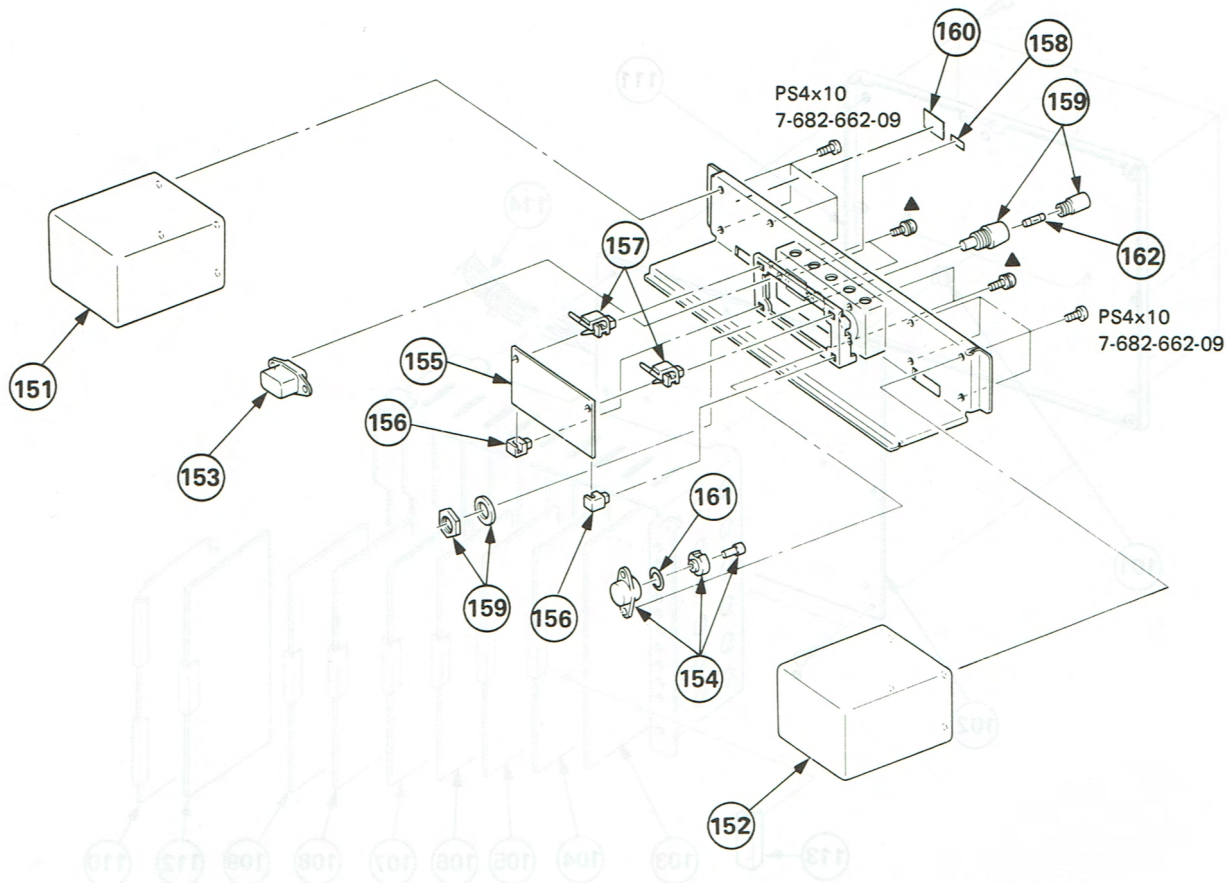


No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
101	*3-660-828-00	HOLDER (9), PC BOARD		108	*A-1135-160-A	BE BOARD, COMPLETE	
102	*1-617-865-11	TB BOARD		109	*A-1135-159-A	BD BOARD, COMPLETE	
103	*A-1135-142-A	BJ BOARD, COMPLETE		110	*1-605-856-00	Z BOARD	
104	*A-1135-141-A	BI BOARD, COMPLETE		111	*4-353-757-00	PLATE (M), SHIELD	
105	*A-1135-140-A	BH BOARD, COMPLETE		112	*1-617-867-11	BB BOARD	
106	*A-1135-171-A	BG BOARD, COMPLETE		113	*4-353-708-00	HOOK, FINGER	
107	*A-1135-294-A	BF BOARD, COMPLETE		114	*1-937-030-11	HARNESS (TB)	

(4) POWER BLOCK

▲ : PS3x8

7-682-648-09



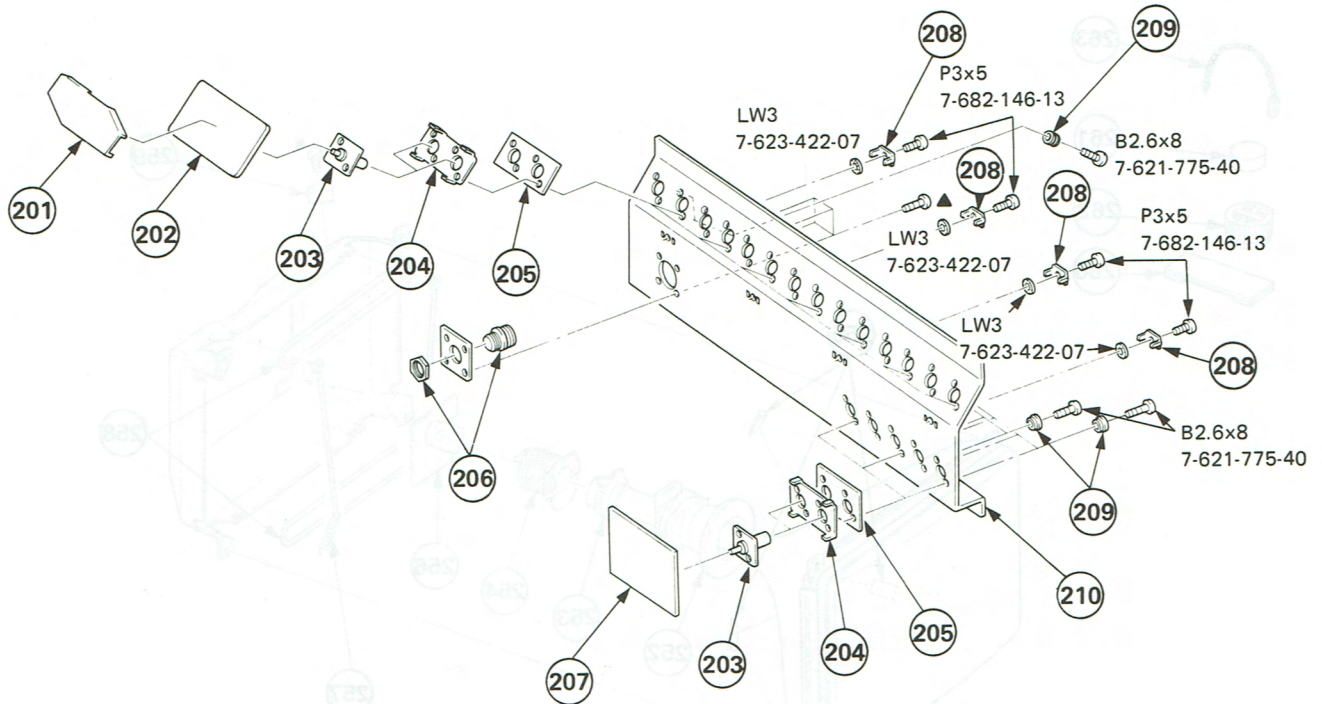
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
151	▲.1-447-220-11	TRANSFORMER, POWER		157	*3-703-141-00	HOLDER, PCB	
152	▲.1-447-219-11	TRANSFORMER, POWER		158	4-337-218-21	LABEL, VOLTAGE INDICATION	
153	▲.1-509-546-11	3P INLET		159	1-533-148-00	HOLDER, FUSE	
154	▲.1-526-572-11	SOCKET, POWER VOLTAGE SELECT		160	*4-379-002-01	LABEL, MODEL NUMBER (LARGE)	
155	*1-605-843-00	F BOARD		161	*2-232-802-00	SEAL	
156	*3-701-903-00	HOLDER, PC BOARD		162	▲.1-532-286-11	FUSE, TIME-LAG 2.5A/250V	

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

(5) CONNECTOR PANEL

▲ : PS3x8

7-682-648-09

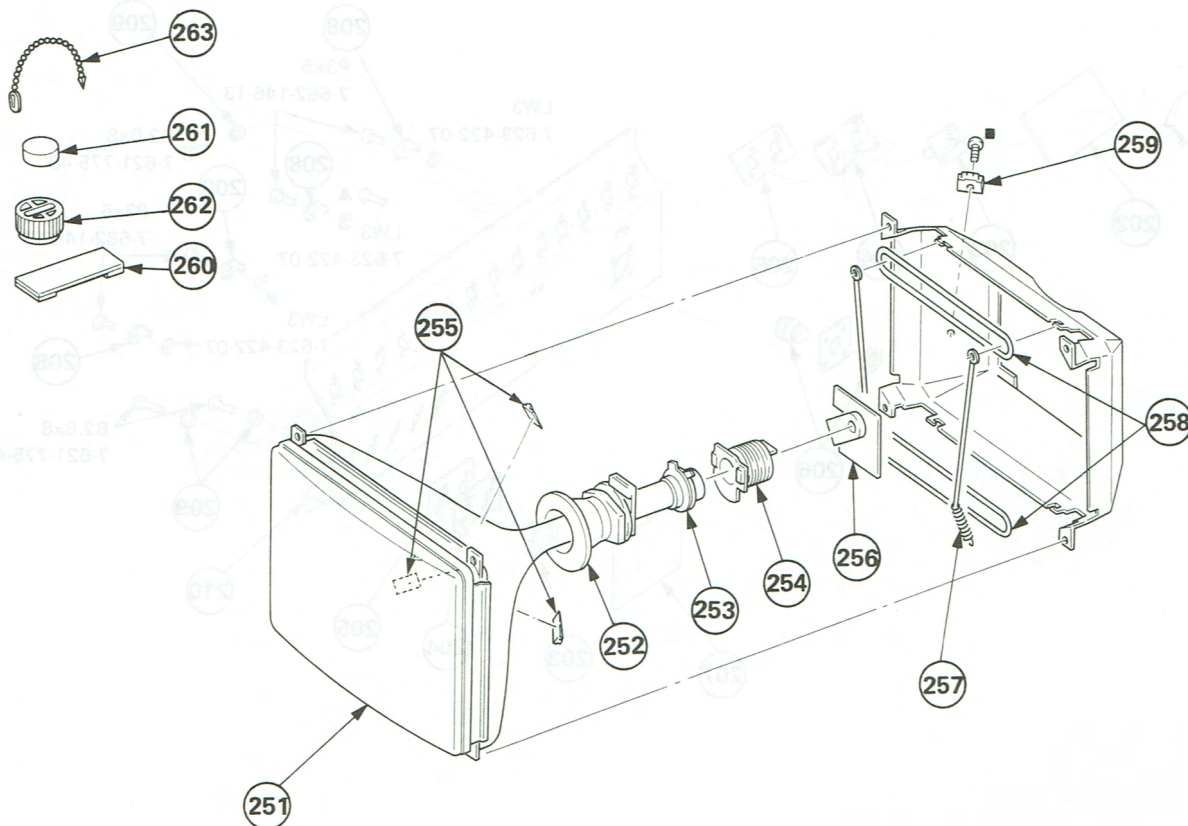


No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
201	*4-337-216-00	PLATE (W), SHIELD		206	1-508-382-00	CONNECTOR (10P)	
202	*1-600-345-00	W BOARD		207	*1-605-853-00	WB BOARD/WC BOARD	
203	1-509-131-11	CONNECTOR, BNC		208	4-335-978-00	TERMINAL, BNC GROUND	
204	*4-335-927-00	TERMINAL (S), GROUND		209	4-335-901-00	BUSHING, BNC CONNECTOR	
205	*4-335-929-00	INSULATOR		210	*4-353-751-00	PANEL, CONNECTOR, BNC	

The components identified
by shading and mark ▲ are
critical for safety.
Replace only with part
number specified.

(6) CRT BLOCK

■ : TA, BV3x8 7-685-646-71

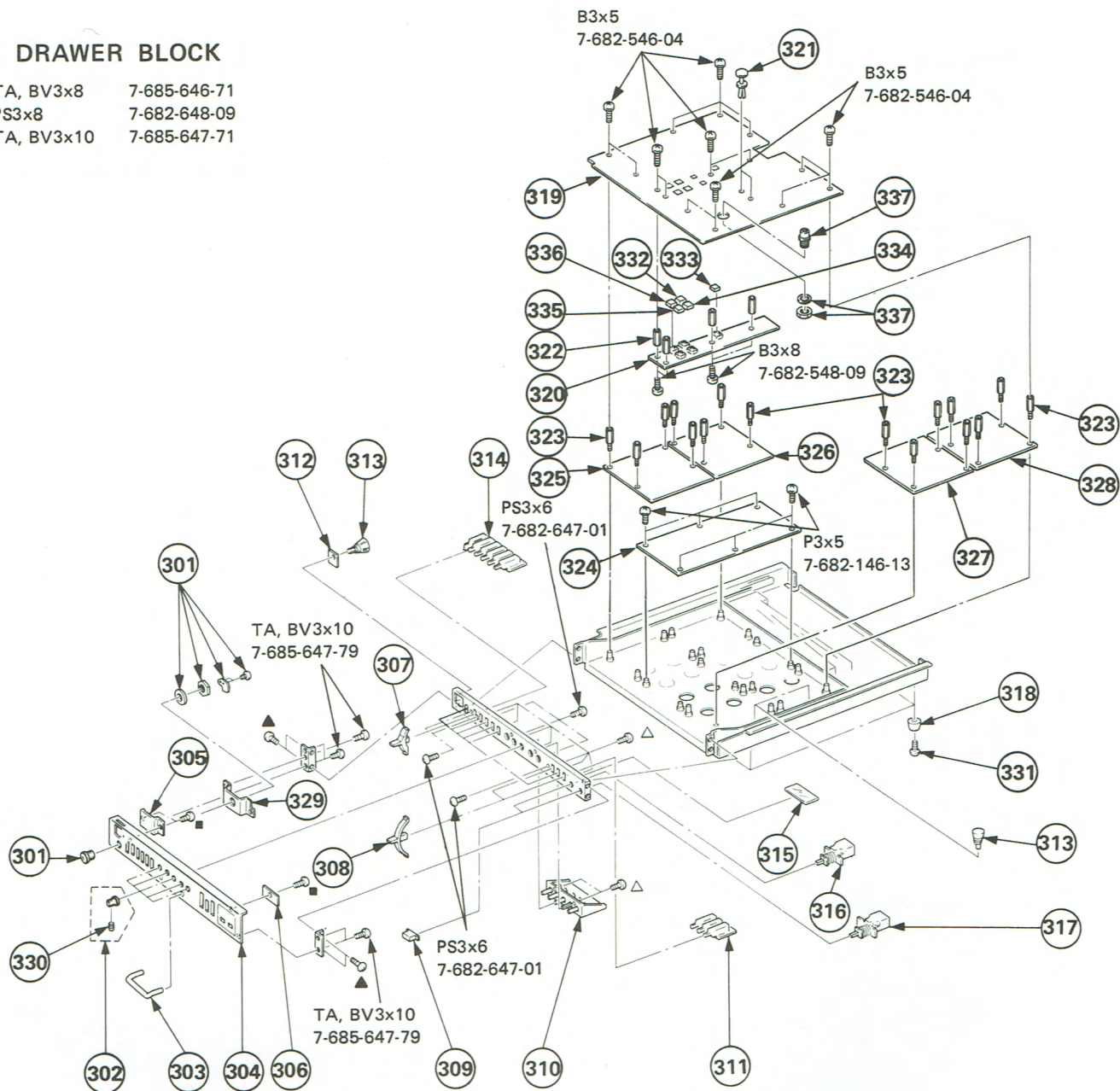


No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
251	▲.8-733-051-05	CRT (520UB22)		258	▲.1-426-087-21	COIL, DEGAUSSING	
252	▲.1-451-211-12	DEFLECTION YOKE (SY-112)		259	*4-309-624-00	TERMINAL, EARTH	
253	▲.1-452-261-11	CRT NECK ASSY (362)		260	X-4308-815-0	PERMALLOY ASSY, CONVERGENCE	
254	▲.1-452-262-11	CRT NECK ASSY (361)		261	1-452-032-00	MAGNET, DISK; 10MM Ø	
255	4-309-369-00	SPACER, DEFLECTION YOKE		262	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM Ø	
256	*A-1330-336-A	C BOARD, COMPLETE		263	4-308-870-00	CLIP, LEAD WIRE	
257	4-303-774-XX	SPRING					

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

(7) DRAWER BLOCK

■ : TA, BV3x8 7-685-646-71
 ▲ : PS3x8 7-682-648-09
 △ : TA, BV3x10 7-685-647-71



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
301	*4-353-736-00	LOCK, CYLINDER		320	*1-617-866-11	TC BOARD	
302	X-4335-906-0	KNOB ASSY, CONTROL	330	321	4-812-134-31	RIVET NYLON, 3.5	
303	*4-353-715-00	HANDLE, DRAWER		322	*2-535-013-02	COLLAR, SCREW	
304	4-353-703-11	PANEL, CONTROL		323	*2-375-791-01	SUPPORT	
305	4-353-701-00	COVER, LAMP		324	*1-605-851-00	TA BOARD	
306	*1-605-855-00	Y BOARD		325	*A-1345-334-A	DC BOARD, COMPLETE	
307	4-335-954-02	KNOB (2P), LEVER SWITCH		326	*A-1345-333-A	DB BOARD, COMPLETE	
308	4-347-105-00	KNOB (4P), LEVER SWITCH		327	*A-1345-367-A	DD BOARD, COMPLETE	
309	4-335-962-00	PUSH BUTTON		328	*A-1345-332-A	DA BOARD, COMPLETE	
310	*1-605-845-00	H BOARD		329	*4-353-707-00	BRACKET, KEY	
311	*1-605-846-00	JA BOARD		330	3-701-506-01	SET SCREW, DOUBLE POINT 3X4	
312	*1-605-854-00	X BOARD		331	3-701-810-61	SCREW, TERMINAL	
313	3-703-356-00	RIVET, T TYPE		332	4-379-004-01	KEY TOP	
314	*1-605-847-00	JB BOARD		333	4-379-004-11	KEY TOP	
315	*4-353-710-00	INSULATOR		334	4-379-004-21	KEY TOP	
316	▲.1-552-895-11	SWITCH, PUSH POWER		335	4-379-004-31	KEY TOP	
317	▲.1-552-896-11	SWITCH, PUSH DEGAUSS		336	4-379-004-41	KEY TOP	
318	X-4836-202-9	FOOT		337		ASSY, CONNCTOR 12P	
319	*4-379-005-01	PLATE, TC					

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

SECTION 7 ELECTRICAL PARTS LIST

BH

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

• Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

When indicating parts by reference number, please include the board name.

• All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS

• All resistors are in ohms
• F : nonflammable

CAPACITORS

• MF : μ F, PF : μ F

COILS

• MMH : mH, UH : μ H

• The components identified by **X** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
	*A-1135-140-A	BH BOARD, COMPLETE *****		C210	1-101-004-00	CERAMIC 0.01MF	50V
	*4-353-708-00	HOOK, FINGER		C211	1-101-004-00	CERAMIC 0.01MF	50V
		CAPACITOR		C212	1-161-024-00	CERAMIC 0.082MF	10% 25V
C1	1-102-936-00	CERAMIC 3PF	0.25PF 50V	C213	1-101-004-00	CERAMIC 0.01MF	50V
C2	1-101-004-00	CERAMIC 0.01MF	50V	C214	1-101-004-00	CERAMIC 0.01MF	50V
C3	1-123-369-00	ELECT 4.7MF	20% 25V	C215	1-161-059-00	CERAMIC 0.047MF	10% 25V
C4	1-101-004-00	CERAMIC 0.01MF	50V	C216	1-101-004-00	CERAMIC 0.01MF	50V
C5	1-161-059-00	CERAMIC 0.047MF	10% 25V	C217	1-161-059-00	CERAMIC 0.047MF	10% 25V
C6	1-102-520-00	CERAMIC 39PF	5% 50V	C218	1-123-356-00	ELECT 10MF	20% 16V
C7	1-123-332-00	ELECT 47MF	20% 16V	C219	1-123-356-00	ELECT 10MF	20% 16V
C8	1-161-059-00	CERAMIC 0.047MF	10% 25V	C301	1-101-004-00	CERAMIC 0.01MF	50V
C9	1-123-356-00	ELECT 10MF	20% 16V	C302	1-121-806-00	ELECT 10MF	16V
C10	1-101-004-00	CERAMIC 0.01MF	50V	C304	1-101-004-00	CERAMIC 0.01MF	50V
C11	1-101-004-00	CERAMIC 0.01MF	50V	C305	1-101-004-00	CERAMIC 0.01MF	50V
C12	1-161-024-00	CERAMIC 0.082MF	10% 25V	C306	1-123-356-00	ELECT 10MF	20% 16V
C13	1-101-004-00	CERAMIC 0.01MF	50V	C307	1-101-004-00	CERAMIC 0.01MF	50V
C14	1-101-004-00	CERAMIC 0.01MF	50V	C309	1-123-356-00	ELECT 10MF	20% 16V
C15	1-161-059-00	CERAMIC 0.047MF	10% 25V	C311	1-101-004-00	CERAMIC 0.01MF	50V
C16	1-101-004-00	CERAMIC 0.01MF	50V	C312	1-101-004-00	CERAMIC 0.01MF	50V
C17	1-161-059-00	CERAMIC 0.047MF	10% 25V	C313	1-101-004-00	CERAMIC 0.01MF	50V
C18	1-123-356-00	ELECT 10MF	20% 16V	C316	1-123-356-00	ELECT 10MF	20% 16V
C19	1-123-356-00	ELECT 10MF	20% 16V	C317	1-101-004-00	CERAMIC 0.01MF	50V
C101	1-102-936-00	CERAMIC 3PF	0.25PF 50V	C318	1-101-004-00	CERAMIC 0.01MF	50V
C102	1-101-004-00	CERAMIC 0.01MF	50V	C319	1-101-004-00	CERAMIC 0.01MF	50V
C103	1-123-369-00	ELECT 4.7MF	20% 25V	C320	1-101-004-00	CERAMIC 0.01MF	50V
C104	1-101-004-00	CERAMIC 0.01MF	50V	C401	1-123-356-00	ELECT 10MF	20% 16V
C105	1-161-059-00	CERAMIC 0.047MF	10% 25V	C402	1-123-356-00	ELECT 10MF	20% 16V
C106	1-102-520-00	CERAMIC 39PF	5% 50V	C403	1-123-356-00	ELECT 10MF	20% 16V
C107	1-123-332-00	ELECT 47MF	20% 16V	C404	1-123-356-00	ELECT 10MF	20% 16V
C108	1-161-059-00	CERAMIC 0.047MF	10% 25V	C405	1-123-356-00	ELECT 10MF	20% 16V
C109	1-123-356-00	ELECT 10MF	20% 16V	C406	1-123-356-00	ELECT 10MF	20% 16V
C110	1-101-004-00	CERAMIC 0.01MF	50V	C407	1-123-356-00	ELECT 10MF	20% 16V
C111	1-101-004-00	CERAMIC 0.01MF	50V	C408	1-123-356-00	ELECT 10MF	20% 16V
C112	1-161-024-00	CERAMIC 0.082MF	10% 25V	C409	1-123-333-00	ELECT 100MF	20% 16V
C113	1-101-004-00	CERAMIC 0.01MF	50V	C421	1-161-059-00	CERAMIC 0.047MF	10% 25V
C114	1-101-004-00	CERAMIC 0.01MF	50V	C422	1-161-059-00	CERAMIC 0.047MF	10% 25V
C115	1-161-059-00	CERAMIC 0.047MF	10% 25V	C423	1-161-059-00	CERAMIC 0.047MF	10% 25V
C116	1-101-004-00	CERAMIC 0.01MF	50V	C424	1-161-059-00	CERAMIC 0.047MF	10% 25V
C117	1-161-059-00	CERAMIC 0.047MF	10% 25V	C425	1-161-059-00	CERAMIC 0.047MF	10% 25V
C118	1-123-356-00	ELECT 10MF	20% 16V	C426	1-161-059-00	CERAMIC 0.047MF	10% 25V
C119	1-123-356-00	ELECT 10MF	20% 16V	C427	1-161-059-00	CERAMIC 0.047MF	10% 25V
C201	1-102-936-00	CERAMIC 3PF	0.25PF 50V	C428	1-161-059-00	CERAMIC 0.047MF	10% 25V
C202	1-101-004-00	CERAMIC 0.01MF	50V	C441	1-123-356-00	ELECT 10MF	20% 16V
C203	1-123-369-00	ELECT 4.7MF	20% 25V	C442	1-123-356-00	ELECT 10MF	20% 16V
C204	1-101-004-00	CERAMIC 0.01MF	50V	C443	1-123-356-00	ELECT 10MF	20% 16V
C205	1-161-059-00	CERAMIC 0.047MF	10% 25V	C444	1-123-356-00	ELECT 10MF	20% 16V
C206	1-102-520-00	CERAMIC 39PF	5% 50V	C461	1-161-059-00	CERAMIC 0.047MF	10% 25V
C207	1-123-332-00	ELECT 47MF	20% 16V	C462	1-161-059-00	CERAMIC 0.047MF	10% 25V
C208	1-161-059-00	CERAMIC 0.047MF	10% 25V	C471	1-161-059-00	CERAMIC 0.047MF	10% 25V
C209	1-123-356-00	ELECT 10MF	20% 16V	C472	1-161-059-00	CERAMIC 0.047MF	10% 25V
				C473	1-161-059-00	CERAMIC 0.047MF	10% 25V

BH

SECTION 7
ELECTRICAL PARTS LIST

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
<u>TRIMMER</u>				Q11	8-765-212-20	TRANSISTOR 2SA925	
CV1	1-141-138-XX	CAP, TRIMMER, 5PF-8PF		Q12	8-765-212-20	TRANSISTOR 2SA925	
CV101	1-141-138-XX	CAP, TRIMMER, 5PF-8PF		Q13	8-729-105-71	TRANSISTOR 2SK523-K2	
CV201	1-141-138-XX	CAP, TRIMMER, 5PF-8PF		Q14	8-729-105-71	TRANSISTOR 2SK523-K2	
<u>DIODE</u>				Q15	8-729-105-71	TRANSISTOR 2SK523-K2	
D1	8-719-101-63	DIODE RD6.8E-L1		Q16	8-765-212-20	TRANSISTOR 2SA925	
D2	8-719-815-55	DIODE 1S1555		Q17	8-765-212-20	TRANSISTOR 2SA925	
D3	8-719-101-50	DIODE RD5.1E-L2		Q18	8-765-300-00	TRANSISTOR 2SC2009	
D4	8-719-815-55	DIODE 1S1555		Q101	8-765-300-00	TRANSISTOR 2SC2009	
D101	8-719-101-63	DIODE RD6.8E-L1		Q102	8-729-300-13	TRANSISTOR 2SC2471	
D102	8-719-815-55	DIODE 1S1555		Q103	8-765-300-00	TRANSISTOR 2SC2009	
D103	8-719-101-50	DIODE RD5.1E-L2		Q104	8-765-300-00	TRANSISTOR 2SC2009	
D104	8-719-815-55	DIODE 1S1555		Q105	8-729-300-13	TRANSISTOR 2SC2471	
D201	8-719-101-63	DIODE RD6.8E-L1		Q106	8-729-300-13	TRANSISTOR 2SC2471	
D202	8-719-815-55	DIODE 1S1555		Q107	8-765-300-00	TRANSISTOR 2SC2009	
D203	8-719-101-50	DIODE RD5.1E-L2		Q108	8-765-300-00	TRANSISTOR 2SC2009	
D204	8-719-815-55	DIODE 1S1555		Q109	8-765-212-20	TRANSISTOR 2SA925	
D301	8-719-815-55	DIODE 1S1555		Q110	8-729-300-13	TRANSISTOR 2SC2471	
D302	8-719-101-69	DIODE RD8.2E-L1		Q111	8-765-212-20	TRANSISTOR 2SA925	
D303	8-719-101-69	DIODE RD8.2E-L1		Q112	8-765-212-20	TRANSISTOR 2SA925	
<u>IC</u>				Q113	8-729-105-71	TRANSISTOR 2SK523-K2	
IC1	8-720-002-97	TRANSISTOR TX429D-7		Q114	8-729-105-71	TRANSISTOR 2SK523-K2	
IC2	8-759-145-58	IC UPC4558C		Q115	8-729-105-71	TRANSISTOR 2SK523-K2	
IC3	8-759-240-53	IC TC4053BP		Q116	8-765-212-20	TRANSISTOR 2SA925	
IC101	8-720-002-97	TRANSISTOR TX429D-7		Q117	8-765-212-20	TRANSISTOR 2SA925	
IC102	8-759-145-58	IC UPC4558C		Q118	8-765-300-00	TRANSISTOR 2SC2009	
IC103	8-759-240-53	IC TC4053BP		Q201	8-765-300-00	TRANSISTOR 2SC2009	
IC201	8-720-002-97	TRANSISTOR TX429D-7		Q202	8-729-300-13	TRANSISTOR 2SC2471	
IC202	8-759-145-58	IC UPC4558C		Q203	8-765-300-00	TRANSISTOR 2SC2009	
IC203	8-759-240-53	IC TC4053BP		Q204	8-765-300-00	TRANSISTOR 2SC2009	
IC301	8-759-145-58	IC UPC4558C		Q205	8-729-300-13	TRANSISTOR 2SC2471	
IC303	8-759-145-58	IC UPC4558C		Q206	8-729-300-13	TRANSISTOR 2SC2471	
IC304	8-759-240-53	IC TC4053BP		Q207	8-765-300-00	TRANSISTOR 2SC2009	
<u>COIL</u>				Q208	8-765-300-00	TRANSISTOR 2SC2009	
L1	1-407-178-XX	MICRO INDUCTOR 1UH		Q209	8-765-212-20	TRANSISTOR 2SA925	
L101	1-407-178-XX	MICRO INDUCTOR 1UH		Q210	8-729-300-13	TRANSISTOR 2SC2471	
L201	1-407-178-XX	MICRO INDUCTOR 1UH		Q211	8-765-212-20	TRANSISTOR 2SA925	
<u>TRANSISTOR</u>				Q212	8-765-212-20	TRANSISTOR 2SA925	
Q1	8-765-300-00	TRANSISTOR 2SC2009		Q213	8-729-105-71	TRANSISTOR 2SK523-K2	
Q2	8-729-300-13	TRANSISTOR 2SC2471		Q214	8-729-105-71	TRANSISTOR 2SK523-K2	
Q3	8-765-300-00	TRANSISTOR 2SC2009		Q215	8-729-105-71	TRANSISTOR 2SK523-K2	
Q4	8-765-300-00	TRANSISTOR 2SC2009		Q216	8-765-212-20	TRANSISTOR 2SA925	
Q5	8-729-300-13	TRANSISTOR 2SC2471		Q217	8-765-212-20	TRANSISTOR 2SA925	
Q6	8-729-300-13	TRANSISTOR 2SC2471		Q218	8-765-300-00	TRANSISTOR 2SC2009	
Q7	8-765-300-00	TRANSISTOR 2SC2009		<u>RESISTOR</u>			
Q8	8-765-300-00	TRANSISTOR 2SC2009		R1	1-247-807-00	CARBON	100 5% 1/6W
Q9	8-765-212-20	TRANSISTOR 2SA925		R2	1-249-419-11	CARBON	1.5K 5% 1/6W
Q10	8-729-300-13	TRANSISTOR 2SC2471		R3	1-247-849-00	CARBON	5.6K 5% 1/6W
				R4	1-247-849-00	CARBON	5.6K 5% 1/6W
				R5	1-202-473-00	SOLID	5.6M 5% 1/4W
				R6	1-214-122-00	METAL	390 1% 1/4W
				R7	1-214-108-00	METAL	100 1% 1/4W

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R8	1-214-126-00	METAL	560 1% 1/4W	R110	1-214-144-00	METAL	3.3K 1% 1/4W
R9	1-214-144-00	METAL	3.3K 1% 1/4W	R111	1-214-124-00	METAL	470 1% 1/4W
R10	1-214-144-00	METAL	3.3K 1% 1/4W	R112	1-247-842-00	CARBON	3K 5% 1/6W
R11	1-214-124-00	METAL	470 1% 1/4W	R113	1-247-853-00	CARBON	8.2K 5% 1/6W
R12	1-247-842-00	CARBON	3K 5% 1/6W	R114	1-214-144-00	METAL	3.3K 1% 1/4W
R13	1-247-853-00	CARBON	8.2K 5% 1/6W	R115	1-214-134-00	METAL	1.2K 1% 1/4W
R14	1-214-144-00	METAL	3.3K 1% 1/4W	R116	1-214-134-00	METAL	1.2K 1% 1/4W
R15	1-214-134-00	METAL	1.2K 1% 1/4W	R117	1-249-419-11	CARBON	1.5K 5% 1/6W
R16	1-214-134-00	METAL	1.2K 1% 1/4W	R118	1-247-840-00	CARBON	2.4K 5% 1/6W
R17	1-249-419-11	CARBON	1.5K 5% 1/6W	R119	1-249-419-11	CARBON	1.5K 5% 1/6W
R18	1-247-840-00	CARBON	2.4K 5% 1/6W	R120	1-214-141-00	METAL	2.4K 1% 1/4W
R19	1-249-419-11	CARBON	1.5K 5% 1/6W	R121	1-249-419-11	CARBON	1.5K 5% 1/6W
R20	1-214-141-00	METAL	2.4K 1% 1/4W	R122	1-247-807-00	CARBON	100 5% 1/6W
R21	1-249-419-11	CARBON	1.5K 5% 1/6W	R123	1-214-132-00	METAL	1K 1% 1/4W
R22	1-247-807-00	CARBON	100 5% 1/6W	R124	1-214-177-00	METAL	75K 1% 1/4W
R23	1-214-132-00	METAL	1K 1% 1/4W	R125	1-202-473-00	SOLID	5.6M 5% 1/4W
R24	1-214-177-00	METAL	75K 1% 1/4W	R126	1-249-429-11	CARBON	10K 5% 1/6W
R25	1-202-473-00	SOLID	5.6M 5% 1/4W	R127	1-247-825-00	CARBON	560 5% 1/6W
R26	1-249-429-11	CARBON	10K 5% 1/6W	R128	1-247-825-00	CARBON	560 5% 1/6W
R27	1-247-825-00	CARBON	560 5% 1/6W	R129	1-249-429-11	CARBON	10K 5% 1/6W
R28	1-247-825-00	CARBON	560 5% 1/6W	R130	1-202-473-00	SOLID	5.6M 5% 1/4W
R29	1-249-429-11	CARBON	10K 5% 1/6W	R131	1-202-473-00	SOLID	5.6M 5% 1/4W
R30	1-202-473-00	SOLID	5.6M 5% 1/4W	R132	1-249-429-11	CARBON	10K 5% 1/6W
R31	1-202-473-00	SOLID	5.6M 5% 1/4W	R133	1-247-831-00	CARBON	1K 5% 1/6W
R32	1-249-429-11	CARBON	10K 5% 1/6W	R134	1-214-156-00	METAL	10K 1% 1/4W
R33	1-247-831-00	CARBON	1K 5% 1/6W	R135	1-249-425-11	CARBON	4.7K 5% 1/6W
R34	1-214-156-00	METAL	10K 1% 1/4W	R136	1-247-857-00	CARBON	12K 5% 1/6W
R35	1-249-425-11	CARBON	4.7K 5% 1/6W	R137	1-247-807-00	CARBON	100 5% 1/6W
R36	1-247-857-00	CARBON	12K 5% 1/6W	R138	1-214-117-00	METAL	240 1% 1/4W
R37	1-247-807-00	CARBON	100 5% 1/6W	R139	1-214-170-00	METAL	39K 1% 1/4W
R38	1-214-117-00	METAL	240 1% 1/4W	R140	1-214-123-00	METAL	430 1% 1/4W
R39	1-214-170-00	METAL	39K 1% 1/4W	R141	1-214-180-00	METAL	100K 1% 1/4W
R40	1-214-123-00	METAL	430 1% 1/4W	R142	1-214-180-00	METAL	100K 1% 1/4W
R41	1-214-180-00	METAL	100K 1% 1/4W	R143	1-214-168-00	METAL	33K 1% 1/4W
R42	1-214-180-00	METAL	100K 1% 1/4W	R144	1-247-852-00	CARBON	7.5K 5% 1/6W
R43	1-214-168-00	METAL	33K 1% 1/4W	R145	1-214-148-00	METAL	4.7K 1% 1/4W
R44	1-247-852-00	CARBON	7.5K 5% 1/6W	R146	1-214-103-00	METAL	62 1% 1/4W
R45	1-214-148-00	METAL	4.7K 1% 1/4W	R148	1-247-807-00	CARBON	100 5% 1/6W
R46	1-214-103-00	METAL	62 1% 1/4W	R149	1-247-807-00	CARBON	100 5% 1/6W
R48	1-247-807-00	CARBON	100 5% 1/6W	R150	1-214-150-00	METAL	5.6K 1% 1/4W
R49	1-247-807-00	CARBON	100 5% 1/6W	R151	1-247-803-00	CARBON	68 5% 1/6W
R50	1-214-150-00	METAL	5.6K 1% 1/4W	R152	1-247-807-00	CARBON	100 5% 1/6W
R51	1-247-803-00	CARBON	68 5% 1/6W	R201	1-247-807-00	CARBON	100 5% 1/6W
R52	1-247-807-00	CARBON	100 5% 1/6W	R202	1-249-419-11	CARBON	1.5K 5% 1/6W
R101	1-247-807-00	CARBON	100 5% 1/6W	R203	1-247-849-00	CARBON	5.6K 5% 1/6W
R102	1-249-419-11	CARBON	1.5K 5% 1/6W	R204	1-247-849-00	CARBON	5.6K 5% 1/6W
R103	1-247-849-00	CARBON	5.6K 5% 1/6W	R205	1-202-473-00	SOLID	5.6M 5% 1/4W
R104	1-247-849-00	CARBON	5.6K 5% 1/6W	R206	1-214-122-00	METAL	390 1% 1/4W
R105	1-202-473-00	SOLID	5.6M 5% 1/4W	R207	1-214-108-00	METAL	100 1% 1/4W
R106	1-214-122-00	METAL	390 1% 1/4W	R208	1-214-126-00	METAL	560 1% 1/4W
R107	1-214-108-00	METAL	100 1% 1/4W	R209	1-214-144-00	METAL	3.3K 1% 1/4W
R108	1-214-126-00	METAL	560 1% 1/4W	R210	1-214-144-00	METAL	3.3K 1% 1/4W
R109	1-214-144-00	METAL	3.3K 1% 1/4W	R211	1-214-124-00	METAL	470 1% 1/4W

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Ref.No.	Part No.	Description				Remark	Ref.No.	Part No.	Description				Remark
R212	1-247-842-00	CARBON	3K	5%	1/6W		R318	1-214-165-00	METAL	24K	1%	1/4W	
R213	1-247-853-00	CARBON	8.2K	5%	1/6W		R319	1-214-152-00	METAL	6.8K	1%	1/4W	
R214	1-214-144-00	METAL	3.3K	1%	1/4W		R320	1-214-156-00	METAL	10K	1%	1/4W	
R215	1-214-134-00	METAL	1.2K	1%	1/4W		R321	1-214-149-00	METAL	5.1K	1%	1/4W	
R216	1-214-134-00	METAL	1.2K	1%	1/4W		R323	1-214-180-00	METAL	100K	1%	1/4W	
R217	1-249-419-11	CARBON	1.5K	5%	1/6W		R324	1-214-151-00	METAL	6.2K	1%	1/4W	
R218	1-247-840-00	CARBON	2.4K	5%	1/6W		R325	1-214-180-00	METAL	100K	1%	1/4W	
R219	1-249-419-11	CARBON	1.5K	5%	1/6W		R326	1-247-831-00	CARBON	1K	5%	1/6W	
R220	1-214-141-00	METAL	2.4K	1%	1/4W		R327	1-214-148-00	METAL	4.7K	1%	1/4W	
R221	1-249-419-11	CARBON	1.5K	5%	1/6W		R328	1-214-158-00	METAL	12K	1%	1/4W	
R222	1-247-807-00	CARBON	100	5%	1/6W		R329	1-247-845-00	CARBON	3.9K	5%	1/6W	
R223	1-214-132-00	METAL	1K	1%	1/4W		R330	1-247-845-00	CARBON	3.9K	5%	1/6W	
R224	1-214-177-00	METAL	75K	1%	1/4W		R331	1-214-156-00	METAL	10K	1%	1/4W	
R225	1-202-473-00	SOLID	5.6M	5%	1/4W								
R226	1-249-429-11	CARBON	10K	5%	1/6W				VARIABLE RESISTOR				
R227	1-247-825-00	CARBON	560	5%	1/6W		RV1	1-228-310-00	RES, ADJ, CERMET 50K				
R228	1-247-825-00	CARBON	560	5%	1/6W		RV3	1-228-310-00	RES, ADJ, CERMET 50K				
R229	1-249-429-11	CARBON	10K	5%	1/6W		RV101	1-228-310-00	RES, ADJ, CERMET 50K				
R230	1-202-473-00	SOLID	5.6M	5%	1/4W		RV103	1-228-310-00	RES, ADJ, CERMET 50K				
R231	1-202-473-00	SOLID	5.6M	5%	1/4W		RV201	1-228-310-00	RES, ADJ, CERMET 50K				
R232	1-249-429-11	CARBON	10K	5%	1/6W		RV203	1-228-310-00	RES, ADJ, CERMET 50K				
R233	1-247-831-00	CARBON	1K	5%	1/6W		RV401	1-228-310-00	RES, ADJ, CERMET 50K				
R234	1-214-156-00	METAL	10K	1%	1/4W								
R235	1-249-425-11	CARBON	4.7K	5%	1/6W								
R236	1-247-857-00	CARBON	12K	5%	1/6W								
R237	1-247-807-00	CARBON	100	5%	1/6W								
R238	1-214-117-00	METAL	240	1%	1/4W								
R239	1-214-170-00	METAL	39K	1%	1/4W								
R240	1-214-123-00	METAL	430	1%	1/4W								
R241	1-214-180-00	METAL	100K	1%	1/4W								

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C29	1-123-332-00	ELECT	47MF 20% 16V	C103	1-123-332-00	ELECT	47MF 20% 16V
C30	1-161-025-00	CERAMIC	0.1MF 10% 25V	C104	1-123-332-00	ELECT	47MF 20% 16V
C31	1-161-025-00	CERAMIC	0.1MF 10% 25V	C106	1-161-059-00	CERAMIC	0.047MF 10% 25V
C32	1-123-332-00	ELECT	47MF 20% 16V	C107	1-161-059-00	CERAMIC	0.047MF 10% 25V
C33	1-102-978-00	CERAMIC	220PF 5% 50V	C111	1-123-332-00	ELECT	47MF 20% 16V
C34	1-102-978-00	CERAMIC	220PF 5% 50V	C112	1-123-332-00	ELECT	47MF 20% 16V
C35	1-102-978-00	CERAMIC	220PF 5% 50V	C113	1-123-332-00	ELECT	47MF 20% 16V
C37	1-102-824-00	CERAMIC	470PF 5% 50V	C114	1-123-332-00	ELECT	47MF 20% 16V
C38	1-123-380-00	ELECT	1MF 20% 50V	C116	1-161-059-00	CERAMIC	0.047MF 10% 25V
C39	1-123-356-00	ELECT	10MF 20% 16V	C117	1-161-059-00	CERAMIC	0.047MF 10% 25V
C40	1-102-531-00	CERAMIC	150PF 5% 50V	<u>DIODE</u>			
C41	1-102-514-00	CERAMIC	22PF 5% 50V	D1	8-719-815-55	DIODE 1S1555	
C42	1-101-004-00	CERAMIC	0.01MF 50V	D2	8-719-815-55	DIODE 1S1555	
C43	1-102-518-00	CERAMIC	33PF 5% 50V	D11	8-719-815-55	DIODE 1S1555	
C44	1-102-518-00	CERAMIC	33PF 5% 50V	D12	8-719-815-55	DIODE 1S1555	
C45	1-102-978-00	CERAMIC	220PF 5% 50V	D13	8-719-815-55	DIODE 1S1555	
C52	1-102-529-00	CERAMIC	100PF 5% 50V	<u>IC</u>			
C53	1-102-529-00	CERAMIC	100PF 5% 50V	IC1	8-759-900-00	IC SN74LS00N	
C56	1-101-004-00	CERAMIC	0.01MF 50V	IC2	8-759-901-75	IC SN74LS175N	
C61	1-123-356-00	ELECT	10MF 20% 16V	IC3	8-759-901-23	IC SN74LS123N	
C62	1-123-356-00	ELECT	10MF 20% 16V	IC4	8-759-900-26	IC SN74LS26N	
C63	1-123-356-00	ELECT	10MF 20% 16V	IC5	8-759-900-26	IC SN74LS26N	
C64	1-123-356-00	ELECT	10MF 20% 16V	IC6	8-759-900-10	IC SN74LS10N	
C65	1-123-356-00	ELECT	10MF 20% 16V	IC7	8-759-901-23	IC SN74LS123N	
C66	1-123-356-00	ELECT	10MF 20% 16V	IC8	8-759-900-00	IC SN74LS00N	
C67	1-123-356-00	ELECT	10MF 20% 16V	IC9	8-759-900-00	IC SN74LS00N	
C68	1-123-356-00	ELECT	10MF 20% 16V	IC10	8-759-901-23	IC SN74LS123N	
C70	1-123-356-00	ELECT	10MF 20% 16V	IC11	8-759-901-58	IC SN74LS158N	
C71	1-123-356-00	ELECT	10MF 20% 16V	IC12	8-759-901-25	IC SN74LS125AN	
C72	1-123-356-00	ELECT	10MF 20% 16V	IC13	8-759-900-00	IC SN74LS00N	
C73	1-123-356-00	ELECT	10MF 20% 16V	IC14	8-759-901-23	IC SN74LS123N	
C74	1-123-356-00	ELECT	10MF 20% 16V	IC15	8-759-900-00	IC SN74LS00N	
C75	1-123-356-00	ELECT	10MF 20% 16V	IC16	8-759-115-55	IC UPC1555C	
C76	1-123-356-00	ELECT	10MF 20% 16V	IC17	8-759-901-23	IC SN74LS123N	
C77	1-123-356-00	ELECT	10MF 20% 16V	IC18	8-759-900-00	IC SN74LS00N	
C78	1-123-356-00	ELECT	10MF 20% 16V	IC19	8-759-900-00	IC SN74LS00N	
C81	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC20	8-759-900-93	IC SN74LS93N	
C82	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC21	8-759-900-00	IC SN74LS00N	
C83	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC22	8-759-900-73	IC SN74LS73AN	
C84	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC23	8-759-900-00	IC SN74LS00N	
C85	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC24	8-759-900-00	IC SN74LS00N	
C86	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC25	8-759-901-23	IC SN74LS123N	
C87	1-161-059-00	CERAMIC	0.047MF 10% 25V	<u>COIL</u>			
C88	1-161-059-00	CERAMIC	0.047MF 10% 25V	L1	1-407-578-00	COIL, VARIABLE 470UH	
C89	1-161-059-00	CERAMIC	0.047MF 10% 25V	L2	1-407-573-00	COIL, VARIABLE 47UH	
C90	1-161-059-00	CERAMIC	0.047MF 10% 25V	<u>TRANSISTOR</u>			
C91	1-161-059-00	CERAMIC	0.047MF 10% 25V	Q1	8-729-603-50	TRANSISTOR 2SC403SP	
C92	1-161-059-00	CERAMIC	0.047MF 10% 25V	Q2	8-729-603-50	TRANSISTOR 2SC403SP	
C93	1-161-059-00	CERAMIC	0.047MF 10% 25V	Q3	8-729-603-50	TRANSISTOR 2SC403SP	
C94	1-161-059-00	CERAMIC	0.047MF 10% 25V	Q4	8-729-603-50	TRANSISTOR 2SC403SP	
C95	1-161-059-00	CERAMIC	0.047MF 10% 25V				
C101	1-123-332-00	ELECT	47MF 20% 16V				
C102	1-123-332-00	ELECT	47MF 20% 16V				

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
Q21	8-729-384-48	TRANSISTOR 2SA844		R53	1-249-425-11	CARBON 4.7K 5%	1/6W
Q22	8-729-603-50	TRANSISTOR 2SC403SP		R54	1-249-425-11	CARBON 4.7K 5%	1/6W
Q23	8-729-603-50	TRANSISTOR 2SC403SP		R55	1-214-150-00	METAL 5.6K 1%	1/4W
Q24	8-729-603-50	TRANSISTOR 2SC403SP		R56	1-214-136-00	METAL 1.5K 1%	1/4W
Q25	8-729-384-48	TRANSISTOR 2SA844		R57	1-247-831-00	CARBON 1K 5%	1/6W
Q26	8-729-384-48	TRANSISTOR 2SA844		R58	1-247-857-00	CARBON 12K 5%	1/6W
Q28	8-729-384-48	TRANSISTOR 2SA844		R59	1-214-174-00	METAL 56K 1%	1/4W
Q29	8-729-603-50	TRANSISTOR 2SC403SP		R60	1-249-429-11	CARBON 10K 5%	1/6W
RESISTOR				R61	1-214-134-00	METAL 1.2K 1%	1/4W
R1	1-214-156-00	METAL 10K 1%	1/4W	R62	1-214-164-00	METAL 22K 1%	1/4W
R2	1-214-167-00	METAL 30K 1%	1/4W	R63	1-247-799-00	CARBON 47 5%	1/6W
R3	1-214-156-00	METAL 10K 1%	1/4W	R64	1-247-859-00	CARBON 15K 5%	1/6W
R4	1-214-156-00	METAL 10K 1%	1/4W	R65	1-249-421-11	CARBON 2.2K 5%	1/6W
R5	1-214-167-00	METAL 30K 1%	1/4W	R66	1-247-799-00	CARBON 47 5%	1/6W
R6	1-247-840-00	CARBON 2.4K 5%	1/6W	R67	1-247-799-00	CARBON 47 5%	1/6W
R7	1-249-425-11	CARBON 4.7K 5%	1/6W	R68	1-247-841-00	CARBON 2.7K 5%	1/6W
R8	1-249-421-11	CARBON 2.2K 5%	1/6W	R69	1-249-425-11	CARBON 4.7K 5%	1/6W
R9	1-214-180-00	METAL 100K 1%	1/4W	R70	1-249-429-11	CARBON 10K 5%	1/6W
R10	1-247-840-00	CARBON 2.4K 5%	1/6W	R71	1-249-421-11	CARBON 2.2K 5%	1/6W
R11	1-247-840-00	CARBON 2.4K 5%	1/6W	R72	1-247-817-00	CARBON 270 5%	1/6W
R12	1-249-425-11	CARBON 4.7K 5%	1/6W	R73	1-247-859-00	CARBON 15K 5%	1/6W
R13	1-249-421-11	CARBON 2.2K 5%	1/6W	R74	1-247-863-00	CARBON 22K 5%	1/6W
R14	1-247-831-00	CARBON 1K 5%	1/6W	R75	1-247-859-00	CARBON 15K 5%	1/6W
R15	1-214-173-00	METAL 51K 1%	1/4W	R76	1-247-863-00	CARBON 22K 5%	1/6W
R16	1-247-863-00	CARBON 22K 5%	1/6W	R79	1-247-831-00	CARBON 1K 5%	1/6W
R17	1-249-429-11	CARBON 10K 5%	1/6W	R80	1-247-831-00	CARBON 1K 5%	1/6W
R18	1-214-173-00	METAL 51K 1%	1/4W	R81	1-249-421-11	CARBON 2.2K 5%	1/6W
R19	1-247-840-00	CARBON 2.4K 5%	1/6W	R82	1-247-895-00	CARBON 470K 5%	1/6W
R21	1-247-841-00	CARBON 2.7K 5%	1/6W	R83	1-214-120-00	METAL 330 1%	1/4W
R22	1-249-434-11	CARBON 27K 5%	1/6W	R84	1-247-825-00	CARBON 560 5%	1/6W
R23	1-249-421-11	CARBON 2.2K 5%	1/6W	R85	1-249-429-11	CARBON 10K 5%	1/6W
R24	1-247-841-00	CARBON 2.7K 5%	1/6W	R86	1-214-180-00	METAL 100K 1%	1/4W
R25	1-249-434-11	CARBON 27K 5%	1/6W	R87	1-214-149-00	METAL 5.1K 1%	1/4W
R26	1-249-421-11	CARBON 2.2K 5%	1/6W	R88	1-247-831-00	CARBON 1K 5%	1/6W
R27	1-249-429-11	CARBON 10K 5%	1/6W	R89	1-247-826-00	CARBON 620 5%	1/6W
R28	1-249-429-11	CARBON 10K 5%	1/6W	R90	1-247-843-00	CARBON 3.3K 5%	1/6W
R29	1-249-429-11	CARBON 10K 5%	1/6W	R91	1-247-821-00	CARBON 390 5%	1/6W
R30	1-247-840-00	CARBON 2.4K 5%	1/6W	R92	1-249-425-11	CARBON 4.7K 5%	1/6W
R31	1-247-840-00	CARBON 2.4K 5%	1/6W	VARIABLE RESISTOR			
R32	1-247-840-00	CARBON 2.4K 5%	1/6W	RV1	1-224-941-00	RES, ADJ, CERMET 20K	
R33	1-214-180-00	METAL 100K 1%	1/4W	RV2	1-224-941-00	RES, ADJ, CERMET 20K	
R34	1-247-840-00	CARBON 2.4K 5%	1/6W	RV3	1-224-942-00	RES, ADJ, CERMET 50K	
R35	1-247-840-00	CARBON 2.4K 5%	1/6W	RV4	1-224-943-00	RES, ADJ, CERMET 100K	
R42	1-249-429-11	CARBON 10K 5%	1/6W	RV7	1-224-941-00	RES, ADJ, CERMET 20K	
R43	1-247-840-00	CARBON 2.4K 5%	1/6W	RV8	1-224-941-00	RES, ADJ, CERMET 20K	
R44	1-247-840-00	CARBON 2.4K 5%	1/6W	RV9	1-224-940-00	RES, ADJ, CERMET 10K	
R45	1-247-840-00	CARBON 2.4K 5%	1/6W	RV10	1-224-942-00	RES, ADJ, CERMET 50K	
R46	1-247-840-00	CARBON 2.4K 5%	1/6W	RV11	1-224-940-00	RES, ADJ, CERMET 10K	
R47	1-214-162-00	METAL 18K 1%	1/4W				
R48	1-214-168-00	METAL 33K 1%	1/4W				
R49	1-247-861-00	CARBON 18K 5%	1/6W				
R52	1-247-817-00	CARBON 270 5%	1/6W				

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
IC11	8-759-900-20	IC SN74LS20N		R21	1-247-831-00	CARBON 1K 5% 1/6W	
IC12	8-759-900-93	IC SN74LS93N		R22	1-249-425-11	CARBON 4.7K 5% 1/6W	
IC13	8-759-900-00	IC SN74LS00N		R23	1-247-820-00	CARBON 360 5% 1/6W	
IC14	8-759-900-10	IC SN74LS10N		R24	1-247-825-00	CARBON 560 5% 1/6W	
IC15	8-759-900-93	IC SN74LS93N		R25	1-247-848-00	CARBON 5.1K 5% 1/6W	
IC16	8-759-145-58	IC UPC4558C		R26	1-214-136-00	METAL 1.5K 1% 1/4W	
IC17	8-759-115-55	IC UPC1555C		R27	1-247-841-00	CARBON 2.7K 5% 1/6W	
TRANSISTOR				R28	1-249-419-11	CARBON 1.5K 5% 1/6W	
Q1	8-729-384-48	TRANSISTOR 2SA844		R29	1-247-859-00	CARBON 15K 5% 1/6W	
Q2	8-729-603-50	TRANSISTOR 2SC403SP		R30	1-247-863-00	CARBON 22K 5% 1/6W	
Q3	8-729-603-50	TRANSISTOR 2SC403SP		R31	1-214-162-00	METAL 18K 1% 1/4W	
Q4	8-729-603-50	TRANSISTOR 2SC403SP		R32	1-249-429-11	CARBON 10K 5% 1/6W	
Q5	8-729-603-50	TRANSISTOR 2SC403SP		R33	1-249-429-11	CARBON 10K 5% 1/6W	
Q6	8-729-603-50	TRANSISTOR 2SC403SP		R34	1-247-845-00	CARBON 3.9K 5% 1/6W	
Q7	8-729-384-48	TRANSISTOR 2SA844		R35	1-214-132-00	METAL 1K 1% 1/4W	
Q8	8-729-384-48	TRANSISTOR 2SA844		R36	1-249-429-11	CARBON 10K 5% 1/6W	
Q9	8-729-603-50	TRANSISTOR 2SC403SP		R37	1-247-897-00	CARBON 560K 5% 1/6W	
Q10	8-729-603-50	TRANSISTOR 2SC403SP		R38	1-247-889-00	CARBON 270K 5% 1/6W	
Q11	8-729-384-48	TRANSISTOR 2SA844		R39	1-247-889-00	CARBON 270K 5% 1/6W	
Q12	8-729-603-50	TRANSISTOR 2SC403SP		R40	1-249-429-11	CARBON 10K 5% 1/6W	
Q13	8-729-603-50	TRANSISTOR 2SC403SP		R41	1-247-859-00	CARBON 15K 5% 1/6W	
Q14	8-729-384-48	TRANSISTOR 2SA844		R42	1-247-863-00	CARBON 22K 5% 1/6W	
Q15	8-729-603-50	TRANSISTOR 2SC403SP		R45	1-214-168-00	METAL 33K 1% 1/4W	
Q16	8-729-603-50	TRANSISTOR 2SC403SP		R46	1-247-861-00	CARBON 18K 5% 1/6W	
Q17	8-729-603-50	TRANSISTOR 2SC403SP		R47	1-247-861-00	CARBON 18K 5% 1/6W	
Q18	8-729-384-48	TRANSISTOR 2SA844		R48	1-249-429-11	CARBON 10K 5% 1/6W	
Q19	8-729-603-50	TRANSISTOR 2SC403SP		R49	1-247-863-00	CARBON 22K 5% 1/6W	
Q20	8-729-603-50	TRANSISTOR 2SC403SP		R50	1-214-180-00	METAL 100K 1% 1/4W	
Q21	8-729-384-48	TRANSISTOR 2SA844		R51	1-249-429-11	CARBON 10K 5% 1/6W	
RESISTOR				R52	1-247-863-00	CARBON 22K 5% 1/6W	
R1	1-214-148-00	METAL 4.7K 1% 1/4W		R53	1-214-178-00	METAL 82K 1% 1/4W	
R2	1-214-146-00	METAL 3.9K 1% 1/4W		R54	1-247-861-00	CARBON 18K 5% 1/6W	
R3	1-249-429-11	CARBON 10K 5% 1/6W		R55	1-247-807-00	CARBON 100 5% 1/6W	
R4	1-247-863-00	CARBON 22K 5% 1/6W		R56	1-247-859-00	CARBON 15K 5% 1/6W	
R5	1-214-149-00	METAL 5.1K 1% 1/4W		R57	1-247-863-00	CARBON 22K 5% 1/6W	
R6	1-214-149-00	METAL 5.1K 1% 1/4W		R58	1-249-429-11	CARBON 10K 5% 1/6W	
R7	1-249-425-11	CARBON 4.7K 5% 1/6W		R59	1-214-179-00	METAL 91K 1% 1/4W	
R8	1-247-841-00	CARBON 2.7K 5% 1/6W		R60	1-247-817-00	CARBON 270 5% 1/6W	
R9	1-247-816-00	CARBON 240 5% 1/6W		R61	1-214-175-00	METAL 62K 1% 1/4W	
R10	1-247-783-00	CARBON 10 5% 1/6W		R62	1-247-859-00	CARBON 15K 5% 1/6W	
R11	1-247-818-00	CARBON 300 5% 1/6W		R63	1-247-863-00	CARBON 22K 5% 1/6W	
R12	1-247-859-00	CARBON 15K 5% 1/6W		R64	1-247-807-00	CARBON 100 5% 1/6W	
R13	1-247-831-00	CARBON 1K 5% 1/6W		R65	1-249-429-11	CARBON 10K 5% 1/6W	
R14	1-247-859-00	CARBON 15K 5% 1/6W		R66	1-249-429-11	CARBON 10K 5% 1/6W	
R15	1-247-831-00	CARBON 1K 5% 1/6W		R67	1-247-859-00	CARBON 15K 5% 1/6W	
R16	1-249-419-11	CARBON 1.5K 5% 1/6W		R68	1-247-863-00	CARBON 22K 5% 1/6W	
R17	1-247-859-00	CARBON 15K 5% 1/6W		R69	1-247-859-00	CARBON 15K 5% 1/6W	
R18	1-247-841-00	CARBON 2.7K 5% 1/6W		R70	1-247-863-00	CARBON 22K 5% 1/6W	
R19	1-249-434-11	CARBON 27K 5% 1/6W		R71	1-249-429-11	CARBON 10K 5% 1/6W	
R20	1-247-874-00	CARBON 62K 5% 1/6W		R72	1-247-859-00	CARBON 15K 5% 1/6W	
				R73	1-247-863-00	CARBON 22K 5% 1/6W	
				R74	1-247-859-00	CARBON 15K 5% 1/6W	
				R75	1-247-863-00	CARBON 22K 5% 1/6W	

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R76	1-247-859-00	CARBON 15K 5% 1/6W		C14	1-161-059-00	CERAMIC 0.047MF 10% 25V	
R77	1-247-863-00	CARBON 22K 5% 1/6W		C15	1-161-059-00	CERAMIC 0.047MF 10% 25V	
R81	1-214-156-00	METAL 10K 1% 1/4W		C16	1-101-004-00	CERAMIC 0.01MF 50V	
R82	1-214-145-00	METAL 3.6K 1% 1/4W		C17	1-161-059-00	CERAMIC 0.047MF 10% 25V	
R83	1-214-173-00	METAL 51K 1% 1/4W		C18	1-101-004-00	CERAMIC 0.01MF 50V	
R84	1-249-429-11	CARBON 10K 5% 1/6W		C19	1-161-059-00	CERAMIC 0.047MF 10% 25V	
R85	1-214-140-00	METAL 2.2K 1% 1/4W		C20	1-101-004-00	CERAMIC 0.01MF 50V	
R86	1-214-148-00	METAL 4.7K 1% 1/4W		C21	1-161-059-00	CERAMIC 0.047MF 10% 25V	
R87	1-249-429-11	CARBON 10K 5% 1/6W		C22	1-121-806-00	ELECT 10MF 16V	
R88	1-249-429-11	CARBON 10K 5% 1/6W		C23	1-123-332-00	ELECT 47MF 20% 16V	
R89	1-247-864-00	CARBON 24K 5% 1/6W		C24	1-101-004-00	CERAMIC 0.01MF 50V	
R90	1-247-851-00	CARBON 6.8K 5% 1/6W		C25	1-161-059-00	CERAMIC 0.047MF 10% 25V	
VARIABLE RESISTOR				C27	1-102-508-00	CERAMIC 10PF 0.5PF 50V	
RV1	1-224-941-00	RES, ADJ, CERMET 20K		C28	1-102-525-00	CERAMIC 68PF 5% 50V	
RV2	1-224-941-00	RES, ADJ, CERMET 20K		C29	1-161-059-00	CERAMIC 0.047MF 10% 25V	
RV3	1-224-941-00	RES, ADJ, CERMET 20K		C30	1-101-004-00	CERAMIC 0.01MF 50V	
*****				C31	1-123-332-00	ELECT 47MF 20% 16V	
*A-1135-143-A BK BOARD, COMPLETE				C32	1-123-332-00	ELECT 47MF 20% 16V	
*****				C33	1-123-332-00	ELECT 47MF 20% 16V	
3-701-809-31 SCREW, TERMINAL (M3X8)				C34	1-123-332-00	ELECT 47MF 20% 16V	
*4-026-251-00 SPACER, INSULATING				C35	1-123-332-00	ELECT 47MF 20% 16V	
*4-353-770-00 HEAT SINK (TYPE 220)				C36	1-123-332-00	ELECT 47MF 20% 16V	
CONNECTOR				C37	1-123-332-00	ELECT 47MF 20% 16V	
BK1	*1-508-796-00	PIN, CONNECTOR 2P		C38	1-123-254-00	ELECT 10MF 250V	
BK2	*1-508-796-00	PIN, CONNECTOR 2P		C61	1-161-059-00	CERAMIC 0.047MF 10% 25V	
BK3	*1-508-742-00	PIN, CONNECTOR 3P		C62	1-161-059-00	CERAMIC 0.047MF 10% 25V	
BK101	*1-508-796-21	PIN, CONNECTOR 2P		C63	1-161-059-00	CERAMIC 0.047MF 10% 25V	
BK102	*1-508-796-00	PIN, CONNECTOR 2P		C64	1-161-059-00	CERAMIC 0.047MF 10% 25V	
BK103	*1-508-742-00	PIN, CONNECTOR 3P		C65	1-161-059-00	CERAMIC 0.047MF 10% 25V	
BK201	*1-508-796-21	PIN, CONNECTOR 2P		C66	1-161-059-00	CERAMIC 0.047MF 10% 25V	
BK202	*1-508-796-00	PIN, CONNECTOR 2P		C67	1-161-059-00	CERAMIC 0.047MF 10% 25V	
BK203	*1-508-742-00	PIN, CONNECTOR 3P		C68	1-161-059-00	CERAMIC 0.047MF 10% 25V	
BK301	*1-508-797-31	PIN, CONNECTOR 4P		C69	1-161-059-00	CERAMIC 0.047MF 10% 25V	
BK302	*1-508-797-00	PIN, CONNECTOR 4P		C70	1-102-038-00	CERAMIC 0.001MF 500V	
BK303	*1-508-797-31	PIN, CONNECTOR 4P		C71	1-102-050-00	CERAMIC 0.01MF 500V	
BK304	*1-508-797-00	PIN, CONNECTOR 4P		C81	1-161-059-00	CERAMIC 0.047MF 10% 25V	
CAPACITOR				C85	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C1	1-101-004-00	CERAMIC 0.01MF 50V		C101	1-101-004-00	CERAMIC 0.01MF 50V	
C2	1-123-369-00	ELECT 4.7MF 20% 25V		C102	1-123-369-00	ELECT 4.7MF 20% 25V	
C3	1-102-508-00	CERAMIC 10PF 0.5PF 50V		C103	1-102-508-00	CERAMIC 10PF 0.5PF 50V	
C4	1-123-323-00	ELECT 470MF 20% 16V		C104	1-123-323-00	ELECT 470MF 20% 16V	
C5	1-161-059-00	CERAMIC 0.047MF 10% 25V		C105	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C8	1-161-059-00	CERAMIC 0.047MF 10% 25V		C108	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C9	1-106-367-00	MYLAR 0.01MF 10% 200V		C109	1-106-367-00	MYLAR 0.01MF 10% 200V	
C10	1-123-333-00	ELECT 100MF 20% 16V		C110	1-123-333-00	ELECT 100MF 20% 16V	
C11	1-108-429-00	MYLAR 0.047MF 10% 200V		C111	1-108-429-00	MYLAR 0.047MF 10% 200V	
C12	1-101-004-00	CERAMIC 0.01MF 50V		C112	1-101-004-00	CERAMIC 0.01MF 50V	
C13	1-121-806-00	ELECT 10MF 16V		C113	1-121-806-00	ELECT 10MF 16V	
				C114	1-161-059-00	CERAMIC 0.047MF 10% 25V	
				C115	1-161-059-00	CERAMIC 0.047MF 10% 25V	
				C116	1-101-004-00	CERAMIC 0.01MF 50V	
				C117	1-161-059-00	CERAMIC 0.047MF 10% 25V	
				C118	1-101-004-00	CERAMIC 0.01MF 50V	

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C119	1-161-059-00	CERAMIC	0.047MF 10% 25V	C224	1-101-004-00	CERAMIC	0.01MF 50V
C120	1-101-004-00	CERAMIC	0.01MF 50V	C225	1-161-059-00	CERAMIC	0.047MF 10% 25V
C121	1-161-059-00	CERAMIC	0.047MF 10% 25V	C227	1-102-508-00	CERAMIC	10PF 0.5PF 50V
C122	1-121-806-00	ELECT	10MF 16V	C228	1-102-525-00	CERAMIC	68PF 5% 50V
C123	1-123-332-00	ELECT	47MF 20% 16V	C229	1-161-059-00	CERAMIC	0.047MF 10% 25V
C124	1-101-004-00	CERAMIC	0.01MF 50V	C230	1-101-004-00	CERAMIC	0.01MF 50V
C125	1-161-059-00	CERAMIC	0.047MF 10% 25V	C231	1-123-332-00	ELECT	47MF 20% 16V
C127	1-102-508-00	CERAMIC	10PF 0.5PF 50V	C232	1-123-332-00	ELECT	47MF 20% 16V
C128	1-102-525-00	CERAMIC	68PF 5% 50V	C233	1-123-332-00	ELECT	47MF 20% 16V
C129	1-161-059-00	CERAMIC	0.047MF 10% 25V	C234	1-123-332-00	ELECT	47MF 20% 16V
C130	1-101-004-00	CERAMIC	0.01MF 50V	C235	1-123-332-00	ELECT	47MF 20% 16V
C131	1-123-332-00	ELECT	47MF 20% 16V	C236	1-123-332-00	ELECT	47MF 20% 16V
C132	1-123-332-00	ELECT	47MF 20% 16V	C237	1-123-332-00	ELECT	47MF 20% 16V
C133	1-123-332-00	ELECT	47MF 20% 16V	C238	1-123-254-00	ELECT	10MF 250V
C134	1-123-332-00	ELECT	47MF 20% 16V	C261	1-161-059-00	CERAMIC	0.047MF 10% 25V
C135	1-123-332-00	ELECT	47MF 20% 16V	C262	1-161-059-00	CERAMIC	0.047MF 10% 25V
C136	1-123-332-00	ELECT	47MF 20% 16V	C263	1-161-059-00	CERAMIC	0.047MF 10% 25V
C137	1-123-332-00	ELECT	47MF 20% 16V	C264	1-161-059-00	CERAMIC	0.047MF 10% 25V
C138	1-123-254-00	ELECT	10MF 250V	C265	1-161-059-00	CERAMIC	0.047MF 10% 25V
C161	1-161-059-00	CERAMIC	0.047MF 10% 25V	C266	1-161-059-00	CERAMIC	0.047MF 10% 25V
C162	1-161-059-00	CERAMIC	0.047MF 10% 25V	C267	1-161-059-00	CERAMIC	0.047MF 10% 25V
C163	1-161-059-00	CERAMIC	0.047MF 10% 25V	C268	1-161-059-00	CERAMIC	0.047MF 10% 25V
C164	1-161-059-00	CERAMIC	0.047MF 10% 25V	C269	1-161-059-00	CERAMIC	0.047MF 10% 25V
C165	1-161-059-00	CERAMIC	0.047MF 10% 25V	C270	1-102-038-00	CERAMIC	0.001MF 500V
C166	1-161-059-00	CERAMIC	0.047MF 10% 25V	C271	1-102-050-00	CERAMIC	0.01MF 500V
C167	1-161-059-00	CERAMIC	0.047MF 10% 25V	C281	1-161-059-00	CERAMIC	0.047MF 10% 25V
C168	1-161-059-00	CERAMIC	0.047MF 10% 25V	C285	1-161-059-00	CERAMIC	0.047MF 10% 25V
C169	1-161-059-00	CERAMIC	0.047MF 10% 25V	C301	1-101-004-00	CERAMIC	0.01MF 50V
C170	1-102-038-00	CERAMIC	0.001MF 500V	C302	1-101-004-00	CERAMIC	0.01MF 50V
C171	1-102-050-00	CERAMIC	0.01MF 500V	C303	1-123-369-00	ELECT	4.7MF 20% 25V
C181	1-161-059-00	CERAMIC	0.047MF 10% 25V	C304	1-123-356-00	ELECT	10MF 20% 16V
C185	1-161-059-00	CERAMIC	0.047MF 10% 25V	C305	1-123-369-00	ELECT	4.7MF 20% 25V
C201	1-101-004-00	CERAMIC	0.01MF 50V	C308	1-101-004-00	CERAMIC	0.01MF 50V
C202	1-123-369-00	ELECT	4.7MF 20% 25V	C309	1-101-004-00	CERAMIC	0.01MF 50V
C203	1-102-508-00	CERAMIC	10PF 0.5PF 50V	C310	1-123-356-00	ELECT	10MF 20% 16V
C204	1-123-323-00	ELECT	470MF 20% 16V	C311	1-123-356-00	ELECT	10MF 20% 16V
C205	1-161-059-00	CERAMIC	0.047MF 10% 25V	C312	1-123-333-00	ELECT	100MF 20% 16V
C208	1-161-059-00	CERAMIC	0.047MF 10% 25V	TRIMMER			
C209	1-106-367-00	MYLAR	0.01MF 10% 200V	CV1	1-141-181-11	CAP, TRIMMER	
C210	1-123-333-00	ELECT	100MF 20% 16V	CV2	1-141-138-XX	CAP, TRIMMER, 5PF-8PF	
C211	1-108-429-00	MYLAR	0.047MF 10% 200V	CV101	1-141-181-11	CAP, TRIMMER	
C212	1-101-004-00	CERAMIC	0.01MF 50V	CV102	1-141-138-XX	CAP, TRIMMER, 5PF-8PF	
C213	1-121-806-00	ELECT	10MF 16V	CV201	1-141-181-11	CAP, TRIMMER	
C214	1-161-059-00	CERAMIC	0.047MF 10% 25V	CV202	1-141-138-XX	CAP, TRIMMER, 5PF-8PF	
C215	1-161-059-00	CERAMIC	0.047MF 10% 25V	DIODE			
C216	1-101-004-00	CERAMIC	0.01MF 50V	D1	8-719-102-62	DIODE RD4.3E-N2	
C217	1-161-059-00	CERAMIC	0.047MF 10% 25V	D2	8-719-100-27	DIODE RD4.7E-B2	
C218	1-101-004-00	CERAMIC	0.01MF 50V	D3	8-719-911-19	DIODE 1SS119	
C219	1-161-059-00	CERAMIC	0.047MF 10% 25V	D4	8-719-911-19	DIODE 1SS119	
C220	1-101-004-00	CERAMIC	0.01MF 50V	D5	8-719-911-19	DIODE 1SS119	
C221	1-161-059-00	CERAMIC	0.047MF 10% 25V				
C222	1-121-806-00	ELECT	10MF 16V				
C223	1-123-332-00	ELECT	47MF 20% 16V				

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
D6	8-719-300-86	DIODE RU-1A		D211	8-719-300-86	DIODE RU-1A	
D7	8-719-300-86	DIODE RU-1A		D212	8-719-911-19	DIODE 1SS119	
D8	8-719-300-86	DIODE RU-1A		D213	8-719-911-19	DIODE 1SS119	
D9	8-719-300-86	DIODE RU-1A		D214	8-719-911-19	DIODE 1SS119	
D10	8-719-300-86	DIODE RU-1A		D215	8-719-911-19	DIODE 1SS119	
D11	8-719-300-86	DIODE RU-1A		D216	8-719-911-19	DIODE 1SS119	
D12	8-719-911-19	DIODE 1SS119		D217	8-719-911-19	DIODE 1SS119	
D13	8-719-911-19	DIODE 1SS119		D218	8-719-911-19	DIODE 1SS119	
D14	8-719-911-19	DIODE 1SS119		D219	8-719-911-19	DIODE 1SS119	
D15	8-719-911-19	DIODE 1SS119		D220	8-719-815-55	DIODE 1S1555	
D16	8-719-911-19	DIODE 1SS119		D221	8-719-911-19	DIODE 1SS119	
D17	8-719-911-19	DIODE 1SS119		D222	8-719-911-19	DIODE 1SS119	
D18	8-719-911-19	DIODE 1SS119		D223	8-719-911-19	DIODE 1SS119	
D19	8-719-911-19	DIODE 1SS119		D224	8-719-911-19	DIODE 1SS119	
D20	8-719-815-55	DIODE 1S1555		D301	8-719-911-19	DIODE 1SS119	
D21	8-719-911-19	DIODE 1SS119		<u>IC</u>			
D22	8-719-911-19	DIODE 1SS119		IC1	8-720-002-97	TRANSISTOR TX429D-7	
D23	8-719-911-19	DIODE 1SS119		IC2	8-759-990-82	IC TL082CP	
D24	8-719-911-19	DIODE 1SS119		IC3	8-759-990-82	IC TL082CP	
D101	8-719-102-62	DIODE RD4.3E-N2		IC4	8-759-990-82	IC TL082CP	
D102	8-719-100-27	DIODE RD4.7E-B2		IC101	8-720-002-97	TRANSISTOR TX429D-7	
D103	8-719-911-19	DIODE 1SS119		IC102	8-759-990-82	IC TL082CP	
D104	8-719-911-19	DIODE 1SS119		IC103	8-759-990-82	IC TL082CP	
D105	8-719-911-19	DIODE 1SS119		IC104	8-759-990-82	IC TL082CP	
D106	8-719-300-86	DIODE RU-1A		IC201	8-720-002-97	TRANSISTOR TX429D-7	
D107	8-719-300-86	DIODE RU-1A		IC202	8-759-990-82	IC TL082CP	
D108	8-719-300-86	DIODE RU-1A		IC203	8-759-990-82	IC TL082CP	
D109	8-719-300-86	DIODE RU-1A		IC204	8-759-990-82	IC TL082CP	
D110	8-719-300-86	DIODE RU-1A		<u>COIL</u>			
D111	8-719-300-86	DIODE RU-1A		L1	1-408-421-00	MICRO INDUCTOR 100UH	
D112	8-719-911-19	DIODE 1SS119		L2	1-408-421-00	MICRO INDUCTOR 100UH	
D113	8-719-911-19	DIODE 1SS119		L3	1-408-403-00	MICRO INDUCTOR 3.3UH	
D114	8-719-911-19	DIODE 1SS119		L101	1-408-421-00	MICRO INDUCTOR 100UH	
D115	8-719-911-19	DIODE 1SS119		L102	1-408-421-00	MICRO INDUCTOR 100UH	
D116	8-719-911-19	DIODE 1SS119		L103	1-408-403-00	MICRO INDUCTOR 3.3UH	
D117	8-719-911-19	DIODE 1SS119		L201	1-408-421-00	MICRO INDUCTOR 100UH	
D118	8-719-911-19	DIODE 1SS119		L202	1-408-421-00	MICRO INDUCTOR 100UH	
D119	8-719-911-19	DIODE 1SS119		L203	1-408-403-00	MICRO INDUCTOR 3.3UH	
D120	8-719-815-55	DIODE 1S1555		<u>TRANSISTOR</u>			
D121	8-719-911-19	DIODE 1SS119		Q1	8-729-300-13	TRANSISTOR 2SC2471	
D122	8-719-911-19	DIODE 1SS119		Q2	8-765-212-20	TRANSISTOR 2SA925	
D123	8-719-911-19	DIODE 1SS119		Q3	8-765-212-20	TRANSISTOR 2SA925	
D124	8-719-911-19	DIODE 1SS119		Q4	8-765-212-20	TRANSISTOR 2SA925	
D201	8-719-102-62	DIODE RD4.3E-N2		Q5	8-729-300-13	TRANSISTOR 2SC2471	
D202	8-719-100-27	DIODE RD4.7E-B2		Q6	8-765-212-20	TRANSISTOR 2SA925	
D203	8-719-911-19	DIODE 1SS119		Q7	8-729-300-13	TRANSISTOR 2SC2471	
D204	8-719-911-19	DIODE 1SS119		Q8	8-729-300-13	TRANSISTOR 2SC2471	
D205	8-719-911-19	DIODE 1SS119		Q9	8-729-300-13	TRANSISTOR 2SC2471	
D206	8-719-300-86	DIODE RU-1A		Q10	8-729-300-13	TRANSISTOR 2SC2471	
D207	8-719-300-86	DIODE RU-1A		Q11	8-729-300-13	TRANSISTOR 2SC2471	
D208	8-719-300-86	DIODE RU-1A					
D209	8-719-300-86	DIODE RU-1A					
D210	8-719-300-86	DIODE RU-1A					

BK

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
Q12	8-729-114-22	TRANSISTOR 2SA1142		Q209	8-729-300-13	TRANSISTOR 2SC2471	
Q13	8-729-168-22	TRANSISTOR 2SC2682		Q210	8-729-300-13	TRANSISTOR 2SC2471	
Q14	8-729-168-22	TRANSISTOR 2SC2682		Q211	8-729-300-13	TRANSISTOR 2SC2471	
Q15	8-729-114-22	TRANSISTOR 2SA1142		Q212	8-729-114-22	TRANSISTOR 2SA1142	
Q16	8-729-105-71	TRANSISTOR 2SK523-K2		Q213	8-729-168-22	TRANSISTOR 2SC2682	
Q17	8-723-305-00	TRANSISTOR 2SK43-5		Q214	8-729-168-22	TRANSISTOR 2SC2682	
Q18	8-729-105-71	TRANSISTOR 2SK523-K2		Q215	8-729-114-22	TRANSISTOR 2SA1142	
Q19	8-723-305-00	TRANSISTOR 2SK43-5		Q216	8-729-105-71	TRANSISTOR 2SK523-K2	
Q20	8-729-603-50	TRANSISTOR 2SC403SP		Q217	8-723-305-00	TRANSISTOR 2SK43-5	
Q21	8-729-105-71	TRANSISTOR 2SK523-K2		Q218	8-729-105-71	TRANSISTOR 2SK523-K2	
Q22	8-723-305-00	TRANSISTOR 2SK43-5		Q219	8-723-305-00	TRANSISTOR 2SK43-5	
Q23	8-723-305-00	TRANSISTOR 2SK43-5		Q220	8-729-603-50	TRANSISTOR 2SC403SP	
Q24	8-729-105-71	TRANSISTOR 2SK523-K2		Q221	8-729-105-71	TRANSISTOR 2SK523-K2	
Q25	8-729-105-71	TRANSISTOR 2SK523-K2		Q222	8-723-305-00	TRANSISTOR 2SK43-5	
Q27	8-723-305-00	TRANSISTOR 2SK43-5		Q223	8-723-305-00	TRANSISTOR 2SK43-5	
Q28	8-729-384-48	TRANSISTOR 2SA844		Q224	8-729-105-71	TRANSISTOR 2SK523-K2	
Q29	8-729-105-71	TRANSISTOR 2SK523-K2		Q225	8-729-105-71	TRANSISTOR 2SK523-K2	
Q101	8-729-300-13	TRANSISTOR 2SC2471		Q227	8-723-305-00	TRANSISTOR 2SK43-5	
Q102	8-765-212-20	TRANSISTOR 2SA925		Q228	8-729-384-48	TRANSISTOR 2SA844	
Q103	8-765-212-20	TRANSISTOR 2SA925		Q229	8-729-105-71	TRANSISTOR 2SK523-K2	
Q104	8-765-212-20	TRANSISTOR 2SA925		Q301	8-729-603-50	TRANSISTOR 2SC403SP	
Q105	8-729-300-13	TRANSISTOR 2SC2471		Q302	8-729-384-48	TRANSISTOR 2SA844	
Q106	8-765-212-20	TRANSISTOR 2SA925		RESISTOR			
Q107	8-729-300-13	TRANSISTOR 2SC2471		R1	1-247-849-00	CARBON 5.6K 5%	1/6W
Q108	8-729-300-13	TRANSISTOR 2SC2471		R2	1-247-849-00	CARBON 5.6K 5%	1/6W
Q109	8-729-300-13	TRANSISTOR 2SC2471		R3	1-202-473-00	SOLID 5.6M 5%	1/4W
Q110	8-729-300-13	TRANSISTOR 2SC2471		R4	1-214-126-00	METAL 560 1%	1/4W
Q111	8-729-300-13	TRANSISTOR 2SC2471		R5	1-247-807-00	CARBON 100 5%	1/6W
Q112	8-729-114-22	TRANSISTOR 2SA1142		R6	1-214-122-00	METAL 390 1%	1/4W
Q113	8-729-168-22	TRANSISTOR 2SC2682		R7	1-214-134-00	METAL 1.2K 1%	1/4W
Q114	8-729-168-22	TRANSISTOR 2SC2682		R8	1-214-142-00	METAL 2.7K 1%	1/4W
Q115	8-729-114-22	TRANSISTOR 2SA1142		R9	1-247-843-00	CARBON 3.3K 5%	1/6W
Q116	8-729-105-71	TRANSISTOR 2SK523-K2		R10	1-214-140-00	METAL 2.2K 1%	1/4W
Q117	8-723-305-00	TRANSISTOR 2SK43-5		R11	1-214-122-00	METAL 390 1%	1/4W
Q118	8-729-105-71	TRANSISTOR 2SK523-K2		R12	1-247-807-00	CARBON 100 5%	1/6W
Q119	8-723-305-00	TRANSISTOR 2SK43-5		R13	1-214-159-00	METAL 13K 1%	1/4W
Q120	8-729-603-50	TRANSISTOR 2SC403SP		R14	1-214-136-00	METAL 1.5K 1%	1/4W
Q121	8-729-105-71	TRANSISTOR 2SK523-K2		R15	1-214-136-00	METAL 1.5K 1%	1/4W
Q122	8-723-305-00	TRANSISTOR 2SK43-5		R16	1-247-807-00	CARBON 100 5%	1/6W
Q123	8-723-305-00	TRANSISTOR 2SK43-5		R17	1-247-854-00	CARBON 9.1K 5%	1/6W
Q124	8-729-105-71	TRANSISTOR 2SK523-K2		R18	1-249-421-11	CARBON 2.2K 5%	1/6W
Q125	8-729-105-71	TRANSISTOR 2SK523-K2		R19	1-214-124-00	METAL 470 1%	1/4W
Q127	8-723-305-00	TRANSISTOR 2SK43-5		R22	1-214-100-00	METAL 47 1%	1/4W
Q128	8-729-384-48	TRANSISTOR 2SA844		R23	1-214-126-00	METAL 560 1%	1/4W
Q129	8-729-105-71	TRANSISTOR 2SK523-K2		R24	1-214-146-00	METAL 3.9K 1%	1/4W
Q201	8-729-300-13	TRANSISTOR 2SC2471		R25	1-214-148-00	METAL 4.7K 1%	1/4W
Q202	8-765-212-20	TRANSISTOR 2SA925		R27	1-214-132-00	METAL 1K 1%	1/4W
Q203	8-765-212-20	TRANSISTOR 2SA925		R28	1-214-156-00	METAL 10K 1%	1/4W
Q204	8-765-212-20	TRANSISTOR 2SA925		R29	1-247-846-00	CARBON 4.3K 5%	1/6W
Q205	8-729-300-13	TRANSISTOR 2SC2471		R30	1-213-128-11	METAL OXIDE 56 5%	1W F
Q206	8-765-212-20	TRANSISTOR 2SA925		R31	1-247-697-11	CARBON 56 5%	1/4W F
Q207	8-729-300-13	TRANSISTOR 2SC2471		R32	1-247-697-11	CARBON 56 5%	1/4W F
Q208	8-729-300-13	TRANSISTOR 2SC2471					

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R33	1-212-707-00	METAL	150K 1% 1/2W	R91	1-247-807-00	CARBON	100 5% 1/6W
R34	1-214-140-00	METAL	2.2K 1% 1/4W	R92	1-202-822-00	SOLID	2.2K 1% 1/2W
R35	1-214-105-00	METAL	75 1% 1/4W	R93	1-247-807-00	CARBON	100 5% 1/6W
R36	1-246-545-00	SOLID	1M 5% 1/4W	R94	1-214-108-00	METAL	100 1% 1/4W
R37	1-214-172-00	METAL	47K 1% 1/4W	R95	1-247-811-00	CARBON	150 5% 1/6W
R38	1-214-171-00	METAL	43K 1% 1/4W	R96	1-246-545-00	SOLID	1M 5% 1/4W
R39	1-214-148-00	METAL	4.7K 1% 1/4W	R101	1-247-849-00	CARBON	5.6K 5% 1/6W
R40	1-214-172-00	METAL	47K 1% 1/4W	R102	1-247-849-00	CARBON	5.6K 5% 1/6W
R41	1-249-429-11	CARBON	10K 5% 1/6W	R103	1-202-473-00	SOLID	5.6M 5% 1/4W
R43	1-247-833-00	CARBON	1.2K 5% 1/6W	R104	1-214-126-00	METAL	560 1% 1/4W
R44	1-202-473-00	SOLID	5.6M 5% 1/4W	R105	1-247-807-00	CARBON	100 5% 1/6W
R45	1-249-429-11	CARBON	10K 5% 1/6W	R106	1-214-122-00	METAL	390 1% 1/4W
R46	1-246-545-00	SOLID	1M 5% 1/4W	R107	1-214-134-00	METAL	1.2K 1% 1/4W
R47	1-214-180-00	SOLID	100K 1% 1/4W	R108	1-214-142-00	METAL	2.7K 1% 1/4W
R48	1-249-429-11	CARBON	10K 5% 1/6W	R109	1-247-843-00	CARBON	3.3K 5% 1/6W
R49	1-214-156-00	METAL	10K 1% 1/4W	R110	1-214-140-00	METAL	2.2K 1% 1/4W
R50	1-247-857-00	CARBON	12K 5% 1/6W	R111	1-214-122-00	METAL	390 1% 1/4W
R51	1-247-857-00	CARBON	12K 5% 1/6W	R112	1-247-807-00	CARBON	100 5% 1/6W
R52	1-202-822-00	SOLID	2.2K 1% 1/2W	R113	1-214-159-00	METAL	13K 1% 1/4W
R53	1-249-429-11	CARBON	10K 5% 1/6W	R114	1-214-136-00	METAL	1.5K 1% 1/4W
R54	1-247-902-00	CARBON	910K 5% 1/6W	R115	1-214-136-00	METAL	1.5K 1% 1/4W
R55	1-247-849-00	CARBON	5.6K 5% 1/6W	R116	1-247-807-00	CARBON	100 5% 1/6W
R56	1-214-132-00	METAL	1K 1% 1/4W	R117	1-247-854-00	CARBON	9.1K 5% 1/6W
R57	1-246-545-00	SOLID	1M 5% 1/4W	R118	1-249-421-11	CARBON	2.2K 5% 1/6W
R58	1-247-831-00	CARBON	1K 5% 1/6W	R119	1-214-124-00	METAL	470 1% 1/4W
R59	1-214-153-00	METAL	7.5K 1% 1/4W	R122	1-214-100-00	METAL	47 1% 1/4W
R60	1-214-124-00	METAL	470 1% 1/4W	R123	1-214-126-00	METAL	560 1% 1/4W
R61	1-249-421-11	CARBON	2.2K 5% 1/6W	R124	1-214-146-00	METAL	3.9K 1% 1/4W
R62	1-247-831-00	CARBON	1K 5% 1/6W	R125	1-214-148-00	METAL	4.7K 1% 1/4W
R63	1-202-473-00	SOLID	5.6M 5% 1/4W	R127	1-214-132-00	METAL	1K 1% 1/4W
R64	1-249-421-11	CARBON	2.2K 5% 1/6W	R128	1-214-156-00	METAL	10K 1% 1/4W
R65	1-249-421-11	CARBON	2.2K 5% 1/6W	R129	1-247-846-00	CARBON	4.3K 5% 1/6W
R66	1-247-831-00	CARBON	1K 5% 1/6W	R130	1-213-128-11	METAL OXIDE	56 5% 1W F
R67	1-202-473-00	SOLID	5.6M 5% 1/4W	R131	1-247-697-11	CARBON	56 5% 1/4W F
R68	1-247-842-00	CARBON	3K 5% 1/6W	R132	1-247-697-11	CARBON	56 5% 1/4W F
R69	1-247-842-00	CARBON	3K 5% 1/6W	R133	1-212-707-00	METAL	150K 1% 1/2W
R70	1-214-156-00	METAL	10K 1% 1/4W	R134	1-214-140-00	METAL	2.2K 1% 1/4W
R71	1-214-154-00	METAL	8.2K 1% 1/4W	R135	1-214-105-00	METAL	75 1% 1/4W
R72	1-212-702-00	METAL	100K 1% 1/2W	R136	1-246-545-00	SOLID	1M 5% 1/4W
R73	1-247-851-00	CARBON	6.8K 5% 1/6W	R137	1-214-172-00	METAL	47K 1% 1/4W
R74	1-214-138-00	METAL	1.8K 1% 1/4W	R138	1-214-171-00	METAL	43K 1% 1/4W
R77	1-206-696-00	METAL OXIDE	22K 5% 2W F	R139	1-214-148-00	METAL	4.7K 1% 1/4W
R80	1-214-138-00	METAL	1.8K 1% 1/4W	R140	1-214-172-00	METAL	47K 1% 1/4W
R81	1-214-144-00	METAL	3.3K 1% 1/4W	R141	1-249-429-11	CARBON	10K 5% 1/6W
R82	1-249-429-11	CARBON	10K 5% 1/6W	R143	1-247-833-00	CARBON	1.2K 5% 1/6W
R83	1-202-473-00	SOLID	5.6M 5% 1/4W	R144	1-202-473-00	SOLID	5.6M 5% 1/4W
R84	1-247-807-00	CARBON	100 5% 1/6W	R145	1-249-429-11	CARBON	10K 5% 1/6W
R85	1-214-140-00	METAL	2.2K 1% 1/4W	R146	1-246-545-00	SOLID	1M 5% 1/4W
R86	1-249-429-11	CARBON	10K 5% 1/6W	R147	1-214-180-00	METAL	100K 1% 1/4W
R87	1-247-879-00	CARBON	100K 5% 1/6W	R148	1-249-429-11	CARBON	10K 5% 1/6W
R88	1-214-124-00	METAL	470 1% 1/4W	R149	1-214-156-00	METAL	10K 1% 1/4W
R89	1-214-087-00	METAL	13 1% 1/4W	R150	1-247-857-00	CARBON	12K 5% 1/6W
R90	1-247-807-00	CARBON	100 5% 1/6W	R151	1-247-857-00	CARBON	12K 5% 1/6W

BK

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R152	1-202-822-00	SOLID	2.2K 1/2W	R213	1-214-159-00	METAL	13K 1% 1/4W
R153	1-249-429-11	CARBON	10K 5% 1/6W	R214	1-214-136-00	METAL	1.5K 1% 1/4W
R154	1-247-902-00	CARBON	910K 5% 1/6W	R215	1-214-136-00	METAL	1.5K 1% 1/4W
R155	1-247-849-00	CARBON	5.6K 5% 1/6W	R216	1-247-807-00	CARBON	100 5% 1/6W
R156	1-214-132-00	METAL	1K 1% 1/4W	R217	1-247-854-00	CARBON	9.1K 5% 1/6W
R157	1-246-545-00	SOLID	1M 5% 1/4W	R218	1-249-421-11	CARBON	2.2K 5% 1/6W
R158	1-247-831-00	CARBON	1K 5% 1/6W	R219	1-214-124-00	METAL	470 1% 1/4W
R159	1-214-153-00	METAL	7.5K 1% 1/4W	R222	1-214-100-00	METAL	47 1% 1/4W
R160	1-214-124-00	METAL	470 1% 1/4W	R223	1-214-126-00	METAL	560 1% 1/4W
R161	1-249-421-11	CARBON	2.2K 5% 1/6W	R224	1-214-146-00	METAL	3.9K 1% 1/4W
R162	1-247-831-00	CARBON	1K 5% 1/6W	R225	1-214-148-00	METAL	4.7K 1% 1/4W
R163	1-202-473-00	SOLID	5.6M 5% 1/4W	R227	1-214-132-00	METAL	1K 1% 1/4W
R164	1-249-421-11	CARBON	2.2K 5% 1/6W	R228	1-214-156-00	METAL	10K 1% 1/4W
R165	1-249-421-11	CARBON	2.2K 5% 1/6W	R229	1-247-846-00	CARBON	4.3K 5% 1/6W
R166	1-247-831-00	CARBON	1K 5% 1/6W	R230	1-213-128-11	METAL OXIDE	56 5% 1W F
R167	1-202-473-00	SOLID	5.6M 5% 1/4W	R231	1-247-697-11	CARBON	56 5% 1/4W F
R168	1-247-842-00	CARBON	3K 5% 1/6W	R232	1-247-697-11	CARBON	56 5% 1/4W F
R169	1-247-842-00	CARBON	3K 5% 1/6W	R233	1-212-707-00	METAL	150K 1% 1/2W
R170	1-214-156-00	METAL	10K 1% 1/4W	R234	1-214-140-00	METAL	2.2K 1% 1/4W
R171	1-214-154-00	METAL	8.2K 1% 1/4W	R235	1-214-105-00	METAL	75 1% 1/4W
R172	1-212-702-00	METAL	100K 1% 1/2W	R236	1-246-545-00	SOLID	1M 5% 1/4W
R173	1-247-851-00	CARBON	6.8K 5% 1/6W	R237	1-214-172-00	METAL	47K 1% 1/4W
R174	1-214-138-00	METAL	1.8K 1% 1/4W	R238	1-214-171-00	METAL	43K 1% 1/4W
R177	1-206-696-00	METAL OXIDE	22K 5% 2W F	R239	1-214-148-00	METAL	4.7K 1% 1/4W
R180	1-214-138-00	METAL	1.8K 1% 1/4W	R240	1-214-172-00	METAL	47K 1% 1/4W
R181	1-214-144-00	METAL	3.3K 1% 1/4W	R241	1-249-429-11	CARBON	10K 5% 1/6W
R182	1-249-429-11	CARBON	10K 5% 1/6W	R243	1-247-833-00	CARBON	1.2K 5% 1/6W
R183	1-202-473-00	SOLID	5.6M 5% 1/4W	R244	1-202-473-00	SOLID	5.6M 5% 1/4W
R184	1-247-807-00	CARBON	100 5% 1/6W	R245	1-249-429-11	CARBON	10K 5% 1/6W
R185	1-214-140-00	METAL	2.2K 1% 1/4W	R246	1-246-545-00	SOLID	1M 5% 1/4W
R186	1-249-429-11	CARBON	10K 5% 1/6W	R247	1-214-180-00	METAL	100K 1% 1/4W
R187	1-247-879-00	CARBON	100K 5% 1/6W	R248	1-249-429-11	CARBON	10K 5% 1/6W
R188	1-214-124-00	METAL	470 1% 1/4W	R249	1-214-156-00	METAL	10K 1% 1/4W
R189	1-214-087-00	METAL	13 1% 1/4W	R250	1-247-857-00	CARBON	12K 5% 1/6W
R190	1-247-807-00	CARBON	100 5% 1/6W	R251	1-247-857-00	CARBON	12K 5% 1/6W
R191	1-247-807-00	CARBON	100 5% 1/6W	R252	1-202-822-00	SOLID	2.2K 1/2W
R192	1-202-822-00	SOLID	2.2K 1/2W	R253	1-249-429-11	CARBON	10K 5% 1/6W
R193	1-247-807-00	CARBON	100 5% 1/6W	R254	1-247-902-00	CARBON	910K 5% 1/6W
R194	1-214-108-00	METAL	100 1% 1/4W	R255	1-247-849-00	CARBON	5.6K 5% 1/6W
R195	1-247-811-00	CARBON	150 5% 1/6W	R256	1-214-132-00	METAL	1K 1% 1/4W
R196	1-246-545-00	SOLID	1M 5% 1/4W	R257	1-246-545-00	SOLID	1M 5% 1/4W
R201	1-247-849-00	CARBON	5.6K 5% 1/6W	R258	1-247-831-00	CARBON	1K 5% 1/6W
R202	1-247-849-00	CARBON	5.6K 5% 1/6W	R259	1-214-153-00	METAL	7.5K 1% 1/4W
R203	1-202-473-00	SOLID	5.6M 5% 1/4W	R260	1-214-124-00	METAL	470 1% 1/4W
R204	1-214-126-00	METAL	560 1% 1/4W	R261	1-249-421-11	CARBON	2.2K 5% 1/6W
R205	1-247-807-00	CARBON	100 5% 1/6W	R262	1-247-831-00	CARBON	1K 5% 1/6W
R206	1-214-122-00	METAL	390 1% 1/4W	R263	1-202-473-00	SOLID	5.6M 5% 1/4W
R207	1-214-134-00	METAL	1.2K 1% 1/4W	R264	1-249-421-11	CARBON	2.2K 5% 1/6W
R208	1-214-142-00	METAL	2.7K 1% 1/4W	R265	1-249-421-11	CARBON	2.2K 5% 1/6W
R209	1-247-843-00	CARBON	3.3K 5% 1/6W	R266	1-247-831-00	CARBON	1K 5% 1/6W
R210	1-214-140-00	METAL	2.2K 1% 1/4W	R267	1-202-473-00	SOLID	5.6M 5% 1/4W
R211	1-214-122-00	METAL	390 1% 1/4W	R268	1-247-842-00	CARBON	3K 5% 1/6W
R212	1-247-807-00	CARBON	100 5% 1/6W	R269	1-247-842-00	CARBON	3K 5% 1/6W

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R270	1-214-156-00	METAL	10K 1% 1/4W	CAPACITOR			
R271	1-214-154-00	METAL	8.2K 1% 1/4W	C1	1-161-059-00	CERAMIC	0.047MF 10% 25V
R272	1-212-702-00	METAL	100K 1% 1/2W	C2	1-102-883-00	CERAMIC	27PF 5% 50V
R273	1-247-851-00	CARBON	6.8K 5% 1/6W	C3	1-161-059-00	CERAMIC	0.047MF 10% 25V
R274	1-214-138-00	METAL	1.8K 1% 1/4W	C4	1-101-004-00	CERAMIC	0.01MF 50V
R277	1-206-696-00	METAL OXIDE	22K 5% 2W F	C5	1-161-059-00	CERAMIC	0.047MF 10% 25V
R280	1-214-138-00	METAL	1.8K 1% 1/4W	C6	1-123-379-00	ELECT	0.47MF 20% 50V
R281	1-214-144-00	METAL	3.3K 1% 1/4W	C7	1-161-059-00	CERAMIC	0.047MF 10% 25V
R282	1-249-429-11	CARBON	10K 5% 1/6W	C10	1-161-059-00	CERAMIC	0.047MF 10% 25V
R283	1-202-473-00	SOLID	5.6M 5% 1/4W	C11	1-101-004-00	CERAMIC	0.01MF 50V
R284	1-247-807-00	CARBON	100 5% 1/6W	C12	1-106-220-00	MYLAR	0.1MF 10% 100V
R285	1-214-140-00	METAL	2.2K 1% 1/4W	C13	1-101-004-00	CERAMIC	0.01MF 50V
R286	1-249-429-11	CARBON	10K 5% 1/6W	C14	1-101-004-00	CERAMIC	0.01MF 50V
R287	1-247-879-00	CARBON	100K 5% 1/6W	C15	1-161-059-00	CERAMIC	0.047MF 10% 25V
R288	1-214-124-00	METAL	470 1% 1/4W	C16	1-106-196-00	MYLAR	0.01MF 10% 100V
R289	1-214-087-00	METAL	13 1% 1/4W	C17	1-102-662-00	CERAMIC	7PF 0.5PF 50V
R290	1-247-807-00	CARBON	100 5% 1/6W	C18	1-102-662-00	CERAMIC	7PF 0.5PF 50V
R291	1-247-807-00	CARBON	100 5% 1/6W	C19	1-123-332-00	ELECT	47MF 20% 16V
R292	1-202-822-00	SOLID	2.2K 1/2W	C20	1-102-516-00	CERAMIC	27PF 5% 50V
R293	1-247-807-00	CARBON	100 5% 1/6W	C21	1-102-518-00	CERAMIC	33PF 5% 50V
R294	1-214-108-00	METAL	100 1% 1/4W	C22	1-123-333-00	ELECT	100MF 20% 16V
R295	1-247-811-00	CARBON	150 5% 1/6W	C23	1-123-333-00	ELECT	100MF 20% 16V
R296	1-246-545-00	SOLID	1M 5% 1/4W	C24	1-161-059-00	CERAMIC	0.047MF 10% 25V
R301	1-249-429-11	CARBON	10K 5% 1/6W	C25	1-123-333-00	ELECT	100MF 20% 16V
R304	1-247-879-00	CARBON	100K 5% 1/6W	C26	1-161-059-00	CERAMIC	0.047MF 10% 25V
R305	1-249-429-11	CARBON	10K 5% 1/6W	C27	1-102-406-00	CERAMIC	2PF 0.25PF 50V
R306	1-249-429-11	CARBON	10K 5% 1/6W	C28	1-121-806-00	ELECT	10MF 16V
R307	1-247-872-00	CARBON	51K 5% 1/6W	C29	1-102-934-00	CERAMIC	1PF 0.25PF 50V
R308	1-247-853-00	CARBON	8.2K 5% 1/6W	C30	1-161-059-00	CERAMIC	0.047MF 10% 25V
R309	1-247-864-00	CARBON	24K 5% 1/6W	C31	1-102-510-00	CERAMIC	12PF 5% 50V
R310	1-249-425-11	CARBON	4.7K 5% 1/6W	C33	1-161-059-00	CERAMIC	0.047MF 10% 25V
R311	1-202-459-00	SOLID	1.5M 5% 1/4W	C34	1-101-004-00	CERAMIC	0.01MF 50V
VARIABLE RESISTOR				C35	1-101-004-00	CERAMIC	0.01MF 50V
RV1	1-224-941-00	RES, ADJ, CERMET 20K		C36	1-123-333-00	ELECT	100MF 20% 16V
RV3	1-224-937-00	RES, ADJ, CERMET 1K		C37	1-123-333-00	ELECT	100MF 20% 16V
RV4	1-224-936-00	RES, ADJ, CERMET 500		C38	1-161-059-00	CERAMIC	0.047MF 10% 25V
RV101	1-224-941-00	RES, ADJ, CERMET 20K		C39	1-123-333-00	ELECT	100MF 20% 16V
RV103	1-224-937-00	RES, ADJ, CERMET 1K		C40	1-161-059-00	CERAMIC	0.047MF 10% 25V
RV104	1-224-936-00	RES, ADJ, CERMET 500		C41	1-101-004-00	CERAMIC	0.01MF 50V
RV201	1-224-941-00	RES, ADJ, CERMET 20K		C42	1-102-531-00	CERAMIC	150PF 5% 50V
RV203	1-224-937-00	RES, ADJ, CERMET 1K		C43	1-102-531-00	CERAMIC	150PF 5% 50V
RV204	1-224-936-00	RES, ADJ, CERMET 500		C44	1-102-531-00	CERAMIC	150PF 5% 50V
*****				C45	1-102-531-00	CERAMIC	150PF 5% 50V
*A-1135-159-A	BD BOARD, COMPLETE			C46	1-102-110-00	CERAMIC	220PF 10% 50V
*****				C47	1-101-004-00	CERAMIC	0.01MF 50V
*1-551-974-00	CONNECTOR (2.5MM) 6P			C48	1-102-531-00	CERAMIC	150PF 5% 50V
*4-353-708-00	HOOK, FINGER			C49	1-102-531-00	CERAMIC	150PF 5% 50V
CONNECTOR				C50	1-102-531-00	CERAMIC	150PF 5% 50V
BD1	*1-508-845-00	PIN, CONNECTOR 6P		C51	1-102-531-00	CERAMIC	150PF 5% 50V
				C52	1-102-531-00	CERAMIC	150PF 5% 50V
				C53	1-161-059-00	CERAMIC	0.047MF 10% 25V
				C54	1-123-356-00	ELECT	10MF 20% 16V

BD

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C55	1-123-332-00	ELECT	47MF 20% 16V	CV3	1-141-138-XX	CAP, TRIMMER, 5PF-8PF	
C56	1-123-356-00	ELECT	10MF 20% 16V	CV4	1-141-147-XX	CAP, TRIMMER	
C57	1-123-332-00	ELECT	47MF 20% 16V			<u>DIODE</u>	
C58	1-102-934-00	CERAMIC	1PF 0.25PF 50V				
C59	1-123-332-00	ELECT	47MF 20% 16V	D1	8-719-815-55	DIODE 1S1555	
C60	1-161-059-00	CERAMIC	0.047MF 10% 25V	D2	8-719-175-07	DIODE RD7.5E-B	
C61	1-123-333-00	ELECT	100MF 20% 16V	D3	8-719-143-07	DIODE RD4.3E-B	
C62	1-102-507-00	CERAMIC	9PF 0.5PF 50V	D4	8-719-815-55	DIODE 1S1555	
C63	1-123-356-00	ELECT	10MF 20% 16V			<u>DELAY LINE</u>	
C64	1-123-356-00	ELECT	10MF 20% 16V	DL1	1-415-184-00	DELAY LINE	
C65	1-161-059-00	CERAMIC	0.047MF 10% 25V	DL2	1-415-184-21	DELAY LINE	
C66	1-102-935-00	CERAMIC	2PF 0.25PF 50V	DL3	1-415-184-00	DELAY LINE	
C101	1-123-332-00	ELECT	47MF 20% 16V			<u>IC</u>	
C102	1-123-332-00	ELECT	47MF 20% 16V	IC1	8-757-182-14	IC CX718D-1	
C103	1-123-332-00	ELECT	47MF 20% 16V	IC2	8-751-300-00	IC CX130	
C104	1-123-332-00	ELECT	47MF 20% 16V	IC3	8-759-990-82	IC TL082CP	
C105	1-123-332-00	ELECT	47MF 20% 16V	IC4	8-751-300-00	IC CX130	
C106	1-123-318-00	ELECT	33MF 20% 16V	IC5	8-759-145-58	IC UPC4558C	
C107	1-123-332-00	ELECT	47MF 20% 16V				
C111	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC6	8-751-300-00	IC CX130	
C112	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC7	8-759-014-95	IC MC1495L	
C113	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC8	8-759-901-57	IC SN74LS157N	
C114	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC9	8-759-901-23	IC SN74LS123N	
C115	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC10	8-759-115-55	IC UPC1555C	
C116	1-161-059-00	CERAMIC	0.047MF 10% 25V				
C117	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC11	8-759-901-23	IC SN74LS123N	
C118	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC12	8-759-900-00	IC SN74LS00N	
C119	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC13	8-759-900-26	IC SN74LS26N	
C120	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC14	8-759-900-00	IC SN74LS00N	
C121	1-123-332-00	ELECT	47MF 20% 16V			<u>COIL</u>	
C122	1-123-332-00	ELECT	47MF 20% 16V	L1	1-407-574-00	COIL, VARIABLE 68UH	
C123	1-123-332-00	ELECT	47MF 20% 16V	L2	1-408-429-00	MICRO INDUCTOR 470UH	
C124	1-123-332-00	ELECT	47MF 20% 16V	L4	1-409-193-00	COIL 3.58MHZ TRAP	
C126	1-123-318-00	ELECT	33MF 20% 16V	L5	1-407-572-00	COIL, VARIABLE 33UH	
C127	1-123-332-00	ELECT	47MF 20% 16V	L6	1-408-399-00	MICRO INDUCTOR 1.5UH	
C131	1-161-059-00	CERAMIC	0.047MF 10% 25V				
C132	1-161-059-00	CERAMIC	0.047MF 10% 25V	L7	1-408-399-00	MICRO INDUCTOR 1.5UH	
C133	1-161-059-00	CERAMIC	0.047MF 10% 25V	L8	1-408-407-00	MICRO INDUCTOR 6.8UH	
C134	1-161-059-00	CERAMIC	0.047MF 10% 25V	L9	1-407-565-00	COIL, VARIABLE 2.2UH	
C135	1-161-059-00	CERAMIC	0.047MF 10% 25V			<u>TRANSISTOR</u>	
C136	1-161-059-00	CERAMIC	0.047MF 10% 25V	Q1	8-729-603-50	TRANSISTOR 2SC403SP	
C137	1-161-059-00	CERAMIC	0.047MF 10% 25V	Q2	8-729-603-50	TRANSISTOR 2SC403SP	
C138	1-161-059-00	CERAMIC	0.047MF 10% 25V	Q3	8-729-384-48	TRANSISTOR 2SA844	
C141	1-123-332-00	ELECT	47MF 20% 16V	Q4	8-729-603-50	TRANSISTOR 2SC403SP	
C142	1-123-332-00	ELECT	47MF 20% 16V	Q5	8-729-603-50	TRANSISTOR 2SC403SP	
C143	1-123-332-00	ELECT	47MF 20% 16V				
C144	1-123-332-00	ELECT	47MF 20% 16V	Q6	8-729-603-50	TRANSISTOR 2SC403SP	
C145	1-123-318-00	ELECT	33MF 20% 16V	Q7	8-729-384-48	TRANSISTOR 2SA844	
C146	1-161-059-00	CERAMIC	0.047MF 10% 25V	Q8	8-729-603-50	TRANSISTOR 2SC403SP	
		<u>TRIMMER</u>		Q9	8-729-384-48	TRANSISTOR 2SA844	
CV1	1-141-138-XX	CAP, TRIMMER, 5PF-8PF		Q10	8-729-603-50	TRANSISTOR 2SC403SP	
CV2	1-141-138-XX	CAP, TRIMMER, 5PF-8PF		Q11	8-729-603-50	TRANSISTOR 2SC403SP	
				Q12	8-729-603-50	TRANSISTOR 2SC403SP	

BD

7. ELECTRICAL PARTS LIST

BD

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R71	1-247-807-00	CARBON	100 5% 1/6W	R124	1-214-138-00	METAL	1.8K 1% 1/4W
R72	1-247-849-00	CARBON	5.6K 5% 1/6W	R125	1-214-127-00	METAL	620 1% 1/4W
R73	1-247-849-00	CARBON	5.6K 5% 1/6W	R126	1-247-852-00	CARBON	7.5K 5% 1/6W
R74	1-249-429-11	CARBON	10K 5% 1/6W	R127	1-214-135-00	METAL	1.3K 1% 1/4W
R75	1-247-807-00	CARBON	100 5% 1/6W	R128	1-214-156-00	METAL	10K 1% 1/4W
R76	1-247-841-00	CARBON	2.7K 5% 1/6W	R129	1-214-159-00	METAL	13K 1% 1/4W
R77	1-247-807-00	CARBON	100 5% 1/6W	R130	1-214-180-00	METAL	100K 1% 1/4W
R78	1-249-429-11	CARBON	10K 5% 1/6W	R131	1-214-143-00	METAL	3K 1% 1/4W
R79	1-249-429-11	CARBON	10K 5% 1/6W	R132	1-214-139-00	METAL	2K 1% 1/4W
R80	1-247-834-00	CARBON	1.3K 5% 1/6W	R133	1-214-127-00	METAL	620 1% 1/4W
R81	1-214-120-00	METAL	330 1% 1/4W	R134	1-247-807-00	CARBON	100 5% 1/6W
R82	1-214-091-00	METAL	20 1% 1/4W	R135	1-247-841-00	CARBON	2.7K 5% 1/6W
R83	1-214-120-00	METAL	330 1% 1/4W	R136	1-247-807-00	CARBON	100 5% 1/6W
R84	1-214-091-00	METAL	20 1% 1/4W	R137	1-249-425-11	CARBON	4.7K 5% 1/6W
R85	1-249-425-11	CARBON	4.7K 5% 1/6W	R138	1-214-124-00	METAL	470 1% 1/4W
R86	1-214-136-00	METAL	1.5K 1% 1/4W	R139	1-214-177-00	METAL	75K 1% 1/4W
R87	1-247-849-00	CARBON	5.6K 5% 1/6W	R140	1-214-155-00	METAL	9.1K 1% 1/4W
R88	1-247-807-00	CARBON	100 5% 1/6W	R141	1-214-180-00	METAL	100K 1% 1/4W
R89	1-247-849-00	CARBON	5.6K 5% 1/6W	R142	1-247-859-00	CARBON	15K 5% 1/6W
R90	1-247-819-00	CARBON	330 5% 1/6W	R143	1-247-863-00	CARBON	22K 5% 1/6W
R91	1-247-807-00	CARBON	100 5% 1/6W	R144	1-214-180-00	METAL	100K 1% 1/4W
R92	1-214-147-00	METAL	4.3K 1% 1/4W	R145	1-214-169-00	METAL	36K 1% 1/4W
R93	1-247-841-00	CARBON	2.7K 5% 1/6W	R146	1-214-142-00	METAL	2.7K 1% 1/4W
R94	1-247-807-00	CARBON	100 5% 1/6W	R147	1-214-163-00	METAL	20K 1% 1/4W
R95	1-249-429-11	CARBON	10K 5% 1/6W	R148	1-247-841-00	CARBON	2.7K 5% 1/6W
R96	1-249-429-11	CARBON	10K 5% 1/6W	R149	1-249-425-11	CARBON	4.7K 5% 1/6W
R97	1-247-834-00	CARBON	1.3K 5% 1/6W	R150	1-247-841-00	CARBON	2.7K 5% 1/6W
R98	1-247-783-00	CARBON	10 5% 1/6W	R151	1-247-851-00	CARBON	6.8K 5% 1/6W
R99	1-202-473-00	SOLID	5.6M 5% 1/4W	R152	1-247-841-00	CARBON	2.7K 5% 1/6W
R100	1-249-429-11	CARBON	10K 5% 1/6W	R153	1-249-425-11	CARBON	4.7K 5% 1/6W
R101	1-249-429-11	CARBON	10K 5% 1/6W	R154	1-247-862-00	CARBON	20K 5% 1/6W
R102	1-247-831-00	CARBON	1K 5% 1/6W	R155	1-249-425-11	CARBON	4.7K 5% 1/6W
R103	1-247-807-00	CARBON	100 5% 1/6W	R156	1-247-862-00	CARBON	20K 5% 1/6W
R104	1-247-841-00	CARBON	2.7K 5% 1/6W	R157	1-247-807-00	CARBON	100 5% 1/6W
R105	1-214-120-00	METAL	330 1% 1/4W	R158	1-247-807-00	CARBON	100 5% 1/6W
R106	1-214-091-00	METAL	20 1% 1/4W	R159	1-249-429-11	CARBON	10K 5% 1/6W
R107	1-247-807-00	CARBON	100 5% 1/6W	R160	1-247-807-00	CARBON	100 5% 1/6W
R108	1-214-120-00	METAL	330 1% 1/4W	R161	1-214-149-00	METAL	5.1K 1% 1/4W
R109	1-214-091-00	METAL	20 1% 1/4W	R162	1-247-807-00	CARBON	100 5% 1/6W
R110	1-249-425-11	CARBON	4.7K 5% 1/6W	R163	1-247-861-00	CARBON	18K 5% 1/6W
R111	1-214-139-00	METAL	2K 1% 1/4W	R164	1-247-841-00	CARBON	2.7K 5% 1/6W
R112	1-249-425-11	CARBON	4.7K 5% 1/6W	R165	1-249-429-11	CARBON	10K 5% 1/6W
R113	1-214-139-00	METAL	2K 1% 1/4W	R166	1-247-824-00	CARBON	510 5% 1/6W
R114	1-247-807-00	CARBON	100 5% 1/6W	R167	1-214-148-00	METAL	4.7K 1% 1/4W
R115	1-249-425-11	CARBON	4.7K 5% 1/6W	R168	1-214-148-00	METAL	4.7K 1% 1/4W
R116	1-214-139-00	METAL	2K 1% 1/4W	R170	1-247-841-00	CARBON	2.7K 5% 1/6W
R117	1-247-807-00	CARBON	100 5% 1/6W	R171	1-247-841-00	CARBON	2.7K 5% 1/6W
R118	1-249-425-11	CARBON	4.7K 5% 1/6W	VARIABLE RESISTOR			
R119	1-214-139-00	METAL	2K 1% 1/4W	RV1	1-224-935-00	RES, ADJ, CERMET 200	
R120	1-249-429-11	CARBON	10K 5% 1/6W	RV2	1-224-937-00	RES, ADJ, CERMET 1K	
R121	1-249-429-11	CARBON	10K 5% 1/6W	RV3	1-224-942-00	RES, ADJ, CERMET 50K	
R122	1-247-807-00	CARBON	100 5% 1/6W	RV4	1-224-942-00	RES, ADJ, CERMET 50K	
R123	1-249-429-11	CARBON	10K 5% 1/6W				

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
RV5	1-224-941-00	RES, ADJ, CERMET 20K		C43	1-101-006-21	CERAMIC 0.047MF	50V
RV6	1-224-940-00	RES, ADJ, CERMET 10K		C45	1-101-006-21	CERAMIC 0.047MF	50V
RV7	1-224-941-00	RES, ADJ, CERMET 20K		C46	1-101-006-21	CERAMIC 0.047MF	50V
				C47	1-101-006-21	CERAMIC 0.047MF	50V
				C48	1-101-006-21	CERAMIC 0.047MF	50V
				C49	1-101-006-21	CERAMIC 0.047MF	50V
S1	1-552-509-00	SWITCH, DIP		C50	1-102-523-00	CERAMIC 56PF	5% 50V
*****				C51	1-109-683-00	MICA 270PF	1% 500V
				C52	1-109-673-00	MICA 100PF	1% 500V
				C53	1-109-656-00	MICA 20PF	1% 500V
				C54	1-101-006-21	CERAMIC 0.047MF	50V
				C55	1-101-880-00	CERAMIC 47PF	5% 50V
				C56	1-161-024-00	CERAMIC 0.082MF	10% 25V
				C57	1-101-004-00	CERAMIC 0.01MF	50V
				C58	1-101-006-21	CERAMIC 0.047MF	50V
C1	1-101-006-21	CERAMIC 0.047MF	50V	C59	1-106-208-00	MYLAR 0.033MF	10% 100V
C2	1-101-004-00	CERAMIC 0.01MF	50V	C60	1-101-001-00	CERAMIC 0.001MF	50V
C4	1-101-004-00	CERAMIC 0.01MF	50V	C61	1-102-531-00	CERAMIC 150PF	5% 50V
C5	1-102-520-00	CERAMIC 39PF	5% 50V	C62	1-102-531-00	CERAMIC 150PF	5% 50V
C6	1-101-004-00	CERAMIC 0.01MF	50V	C63	1-102-531-00	CERAMIC 150PF	5% 50V
C7	1-101-004-00	CERAMIC 0.01MF	50V	C64	1-123-356-00	ELECT 10MF	20% 16V
C8	1-123-356-00	ELECT 10MF	20% 16V	C65	1-101-006-21	CERAMIC 0.047MF	50V
C9	1-123-356-00	ELECT 10MF	20% 16V	C66	1-123-356-00	ELECT 10MF	20% 16V
C10	1-101-004-00	CERAMIC 0.01MF	50V	C67	1-123-356-00	ELECT 10MF	20% 16V
C11	1-101-004-00	CERAMIC 0.01MF	50V	C68	1-101-006-21	CERAMIC 0.047MF	50V
C12	1-101-004-00	CERAMIC 0.01MF	50V	C69	1-101-006-21	CERAMIC 0.047MF	50V
C13	1-161-059-00	CERAMIC 0.047MF	10% 25V	C70	1-123-356-00	ELECT 10MF	20% 16V
C14	1-109-686-00	MICA 360PF	1% 500V	C71	1-123-356-00	ELECT 10MF	20% 16V
C15	1-109-685-00	MICA 330PF	1% 500V	C73	1-123-356-00	ELECT 10MF	20% 16V
C16	1-109-681-71	MICA 220PF	1% 500V	C74	1-101-006-21	CERAMIC 0.047MF	50V
C17	1-101-006-21	CERAMIC 0.047MF	50V	C75	1-123-356-00	ELECT 10MF	20% 16V
C18	1-101-006-21	CERAMIC 0.047MF	50V	C76	1-101-006-21	CERAMIC 0.047MF	50V
C19	1-102-679-00	CERAMIC 120PF	5% 50V	C78	1-123-356-00	ELECT 10MF	20% 16V
C20	1-102-679-00	CERAMIC 120PF	5% 50V	C79	1-123-356-00	ELECT 10MF	20% 16V
C21	1-101-006-21	CERAMIC 0.047MF	50V	C80	1-123-356-00	ELECT 10MF	20% 16V
C22	1-102-889-00	CERAMIC 39PF	5% 50V	C82	1-101-006-21	CERAMIC 0.047MF	50V
C23	1-102-508-00	CERAMIC 10PF	0.5PF 50V	C83	1-101-006-21	CERAMIC 0.047MF	50V
C24	1-101-006-21	CERAMIC 0.047MF	50V	C85	1-101-006-21	CERAMIC 0.047MF	50V
C25	1-102-678-00	CERAMIC 100PF	5% 50V	C86	1-123-356-00	ELECT 10MF	20% 16V
C26	1-101-006-21	CERAMIC 0.047MF	50V	C87	1-123-356-00	ELECT 10MF	20% 16V
C27	1-101-006-21	CERAMIC 0.047MF	50V	C89	1-123-356-00	ELECT 10MF	20% 16V
C28	1-101-006-21	CERAMIC 0.047MF	50V	C90	1-123-356-00	ELECT 10MF	20% 16V
C30	1-121-257-00	ELECT 4.7MF	16V	C92	1-123-356-00	ELECT 10MF	20% 16V
C31	1-123-380-00	ELECT 1MF	20% 50V	C93	1-123-356-00	ELECT 10MF	20% 16V
C32	1-123-380-00	ELECT 1MF	20% 50V	C100	1-123-356-00	ELECT 10MF	20% 16V
C33	1-121-257-00	ELECT 4.7MF	16V				
C35	1-101-001-00	CERAMIC 0.001MF	50V	C108	1-101-004-00	CERAMIC 0.01MF	50V
C36	1-101-006-21	CERAMIC 0.047MF	50V				
C37	1-109-683-00	MICA 270PF	1% 500V				
C38	1-109-673-00	MICA 100PF	1% 500V				

[illegible]

Ref.No.	Part No.	Description				Remark	Ref.No.	Part No.	Description				Remark
R43	1-247-881-00	CARBON	120K	5%	1/6W		R99	1-249-419-11	CARBON	1.5K	5%	1/6W	
R44	1-247-859-00	CARBON	15K	5%	1/6W		R100	1-247-825-00	CARBON	560	5%	1/6W	
R45	1-247-807-00	CARBON	100	5%	1/6W		R101	1-247-825-00	CARBON	560	5%	1/6W	
R46	1-249-421-11	CARBON	2.2K	5%	1/6W		R102	1-249-425-11	CARBON	4.7K	5%	1/6W	
R47	1-247-831-00	CARBON	1K	5%	1/6W		R103	1-247-831-00	CARBON	1K	5%	1/6W	
R48	1-249-419-11	CARBON	1.5K	5%	1/6W		R104	1-247-831-00	CARBON	1K	5%	1/6W	
R49	1-247-807-00	CARBON	100	5%	1/6W		R105	1-247-849-00	CARBON	5.6K	5%	1/6W	
R50	1-214-164-00	METAL	22K	1%	1/4W		R106	1-214-130-00	METAL	820	1%	1/4W	
R51	1-247-807-00	CARBON	100	5%	1/6W		R107	1-214-101-00	METAL	51	1%	1/4W	
R52	1-247-807-00	CARBON	100	5%	1/6W		R108	1-214-130-00	METAL	820	1%	1/4W	
R53	1-214-154-00	METAL	8.2K	1%	1/4W		R109	1-214-101-00	METAL	51	1%	1/4W	
R54	1-214-139-00	METAL	2K	1%	1/4W		R110	1-249-419-11	CARBON	1.5K	5%	1/6W	
R55	1-247-845-00	CARBON	3.9K	5%	1/6W		R111	1-247-849-00	CARBON	5.6K	5%	1/6W	
R56	1-247-807-00	CARBON	100	5%	1/6W		R112	1-247-821-00	CARBON	390	5%	1/6W	
R57	1-214-136-00	METAL	1.5K	1%	1/4W		R113	1-249-421-11	CARBON	2.2K	5%	1/6W	
R58	1-214-136-00	METAL	1.5K	1%	1/4W		R114	1-247-807-00	CARBON	100	5%	1/6W	
R59	1-214-136-00	METAL	1.5K	1%	1/4W		R115	1-249-425-11	CARBON	4.7K	5%	1/6W	
R60	1-214-136-00	METAL	1.5K	1%	1/4W		R116	1-249-429-11	CARBON	10K	5%	1/6W	
R61	1-214-129-00	METAL	750	1%	1/4W		R117	1-247-848-00	CARBON	5.1K	5%	1/6W	
R62	1-247-807-00	CARBON	100	5%	1/6W		R118	1-247-848-00	CARBON	5.1K	5%	1/6W	
R63	1-214-136-00	METAL	1.5K	1%	1/4W		R119	1-249-429-11	CARBON	10K	5%	1/6W	
R64	1-247-807-00	CARBON	100	5%	1/6W		R120	1-202-473-00	SOLID	5.6M	5%	1/4W	
R65	1-247-791-00	CARBON	22	5%	1/6W		R121	1-249-429-11	CARBON	10K	5%	1/6W	
R66	1-249-419-11	CARBON	1.5K	5%	1/6W		R122	1-214-156-00	METAL	10K	1%	1/4W	
R67	1-214-136-00	METAL	1.5K	1%	1/4W		R123	1-214-180-00	METAL	100K	1%	1/4W	
R68	1-249-429-11	CARBON	10K	5%	1/6W		R124	1-247-879-00	CARBON	100K	5%	1/6W	
R71	1-247-893-00	CARBON	390K	5%	1/6W		R125	1-247-864-00	CARBON	24K	5%	1/6W	
R72	1-214-132-00	METAL	1K	1%	1/4W		R126	1-249-429-11	CARBON	10K	5%	1/6W	
R73	1-247-902-00	CARBON	910K	5%	1/6W		R127	1-247-889-00	CARBON	270K	5%	1/6W	
R74	1-247-867-00	CARBON	33K	5%	1/6W		R128	1-247-874-00	CARBON	62K	5%	1/6W	
R75	1-247-887-00	CARBON	220K	5%	1/6W		R129	1-247-841-00	CARBON	2.7K	5%	1/6W	
R76	1-214-132-00	METAL	1K	1%	1/4W		R130	1-247-848-00	CARBON	5.1K	5%	1/6W	
R77	1-247-867-00	CARBON	33K	5%	1/6W		R131	1-214-149-00	METAL	5.1K	1%	1/4W	
R78	1-249-421-11	CARBON	2.2K	5%	1/6W		R132	1-214-171-00	METAL	43K	1%	1/4W	
R79	1-247-823-00	CARBON	470	5%	1/6W		R133	1-247-843-00	CARBON	3.3K	5%	1/6W	
R80	1-247-831-00	CARBON	1K	5%	1/6W		R134	1-247-854-00	CARBON	9.1K	5%	1/6W	
R81	1-247-807-00	CARBON	100	5%	1/6W		R135	1-247-843-00	CARBON	3.3K	5%	1/6W	
R82	1-247-857-00	CARBON	12K	5%	1/6W		R136	1-247-854-00	CARBON	9.1K	5%	1/6W	
R83	1-249-425-11	CARBON	4.7K	5%	1/6W		R137	1-247-843-00	CARBON	3.3K	5%	1/6W	
R84	1-247-857-00	CARBON	12K	5%	1/6W		R138	1-247-854-00	CARBON	9.1K	5%	1/6W	
R85	1-247-841-00	CARBON	2.7K	5%	1/6W		R139	1-247-848-00	CARBON	5.1K	5%	1/6W	
R86	1-214-130-00	METAL	820	1%	1/4W		R140	1-249-429-11	CARBON	10K	5%	1/6W	
R87	1-214-101-00	METAL	51	1%	1/4W		R141	1-247-841-00	CARBON	2.7K	5%	1/6W	
R88	1-214-130-00	METAL	820	1%	1/4W		R142	1-247-858-00	CARBON	13K	5%	1/6W	
R89	1-214-101-00	METAL	51	1%	1/4W		R143	1-249-425-11	CARBON	4.7K	5%	1/6W	
R90	1-249-425-11	CARBON	4.7K	5%	1/6W		R145	1-247-841-00	CARBON	2.7K	5%	1/6W	
R91	1-247-841-00	CARBON	2.7K	5%	1/6W		R158	1-247-837-00	CARBON	1.8K	5%	1/6W	
R92	1-214-130-00	METAL	820	1%	1/4W		R159	1-249-419-11	CARBON	1.5K	5%	1/6W	
R93	1-214-101-00	METAL	51	1%	1/4W		R160	1-247-807-00	CARBON	100	5%	1/6W	
R94	1-214-130-00	METAL	820	1%	1/4W		VARIABLE RESISTOR						
R95	1-214-101-00	METAL	51	1%	1/4W		RV1	1-224-942-00	RES, ADJ, CERMET 50K				
R96	1-249-425-11	CARBON	4.7K	5%	1/6W		RV2	1-224-942-00	RES, ADJ, CERMET 50K				
R97	1-247-807-00	CARBON	100	5%	1/6W								

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
RV3	1-224-936-00	RES, ADJ, CERMET 500		C41	1-123-356-00	ELECT 10MF 20% 16V	
RV4	1-224-941-00	RES, ADJ, CERMET 20K		C42	1-101-004-00	CERAMIC 0.01MF 50V	
RV5	1-224-941-00	RES, ADJ, CERMET 20K		C44	1-102-503-00	CERAMIC 3PF 0.25PF 50V	
RV6	1-224-941-00	RES, ADJ, CERMET 20K		C45	1-123-356-00	ELECT 10MF 20% 16V	
RV7	1-224-941-00	RES, ADJ, CERMET 20K		C46	1-161-059-00	CERAMIC 0.047MF 10% 25V	
<u>TRANSFORMER</u>				C47	1-101-004-00	CERAMIC 0.01MF 50V	
T1	1-404-081-00	TRANSFORMER, DELAY ADJUST		C48	1-161-059-00	CERAMIC 0.047MF 10% 25V	
<u>CRYSTAL</u>				C50	1-123-356-00	ELECT 10MF 20% 16V	
X1	1-527-345-00	CRYSTAL, OSC		C51	1-123-356-00	ELECT 10MF 20% 16V	
*****				C52	1-123-356-00	ELECT 10MF 20% 16V	
*A-1135-171-A BG BOARD, COMPLETE				C53	1-102-503-00	CERAMIC 3PF 0.25PF 50V	
*****				C54	1-123-332-00	ELECT 47MF 20% 16V	
*4-353-708-00 HOOK, FINGER				C55	1-123-380-00	ELECT 1MF 20% 50V	
<u>CAPACITOR</u>				C56	1-101-004-00	CERAMIC 0.01MF 50V	
C1	1-123-356-00	ELECT 10MF 20% 16V		C57	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C2	1-101-004-00	CERAMIC 0.01MF 50V		C59	1-123-332-00	ELECT 47MF 20% 16V	
C4	1-102-503-00	CERAMIC 3PF 0.25PF 50V		C61	1-101-004-00	CERAMIC 0.01MF 50V	
C5	1-123-356-00	ELECT 10MF 20% 16V		C62	1-123-356-00	ELECT 10MF 20% 16V	
C6	1-161-059-00	CERAMIC 0.047MF 10% 25V		C63	1-123-356-00	ELECT 10MF 20% 16V	
C7	1-101-004-00	CERAMIC 0.01MF 50V		C64	1-101-004-00	CERAMIC 0.01MF 50V	
C8	1-161-059-00	CERAMIC 0.047MF 10% 25V		C65	1-101-004-00	CERAMIC 0.01MF 50V	
C9	1-101-004-00	CERAMIC 0.01MF 50V		C66	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C10	1-123-356-00	ELECT 10MF 20% 16V		C67	1-123-356-00	ELECT 10MF 20% 16V	
C11	1-123-356-00	ELECT 10MF 20% 16V		C68	1-123-356-00	ELECT 10MF 20% 16V	
C12	1-123-356-00	ELECT 10MF 20% 16V		C71	1-123-332-00	ELECT 47MF 20% 16V	
C13	1-102-503-00	CERAMIC 3PF 0.25PF 50V		C72	1-123-332-00	ELECT 47MF 20% 16V	
C14	1-123-332-00	ELECT 47MF 20% 16V		C73	1-123-332-00	ELECT 47MF 20% 16V	
C15	1-123-380-00	ELECT 1MF 20% 50V		C74	1-123-332-00	ELECT 47MF 20% 16V	
C16	1-101-004-00	CERAMIC 0.01MF 50V		C75	1-123-332-00	ELECT 47MF 20% 16V	
C17	1-161-059-00	CERAMIC 0.047MF 10% 25V		C76	1-123-332-00	ELECT 47MF 20% 16V	
C19	1-123-332-00	ELECT 47MF 20% 16V		C77	1-123-332-00	ELECT 47MF 20% 16V	
C21	1-123-356-00	ELECT 10MF 20% 16V		C78	1-123-332-00	ELECT 47MF 20% 16V	
C22	1-101-004-00	CERAMIC 0.01MF 50V		C79	1-123-332-00	ELECT 47MF 20% 16V	
C24	1-102-503-00	CERAMIC 3PF 0.25PF 50V		C80	1-123-332-00	ELECT 47MF 20% 16V	
C25	1-123-356-00	ELECT 10MF 20% 16V		C81	1-123-332-00	ELECT 47MF 20% 16V	
C26	1-161-059-00	CERAMIC 0.047MF 10% 25V		C82	1-123-332-00	ELECT 47MF 20% 16V	
C27	1-101-004-00	CERAMIC 0.01MF 50V		C83	1-123-332-00	ELECT 47MF 20% 16V	
C28	1-161-059-00	CERAMIC 0.047MF 10% 25V		C84	1-123-332-00	ELECT 47MF 20% 16V	
C29	1-101-004-00	CERAMIC 0.01MF 50V		C85	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C30	1-123-356-00	ELECT 10MF 20% 16V		C86	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C31	1-123-356-00	ELECT 10MF 20% 16V		C87	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C32	1-123-356-00	ELECT 10MF 20% 16V		C88	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C33	1-102-503-00	CERAMIC 3PF 0.25PF 50V		C89	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C34	1-123-332-00	ELECT 47MF 20% 16V		C91	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C35	1-123-380-00	ELECT 1MF 20% 50V		C92	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C36	1-101-004-00	CERAMIC 0.01MF 50V		C93	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C37	1-161-059-00	CERAMIC 0.047MF 10% 25V		C94	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C39	1-123-332-00	ELECT 47MF 20% 16V		C95	1-161-059-00	CERAMIC 0.047MF 10% 25V	
				C96	1-161-059-00	CERAMIC 0.047MF 10% 25V	
				C97	1-161-059-00	CERAMIC 0.047MF 10% 25V	
				C101	1-161-059-00	CERAMIC 0.047MF 10% 25V	
				C102	1-161-059-00	CERAMIC 0.047MF 10% 25V	
				C103	1-161-059-00	CERAMIC 0.047MF 10% 25V	

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C104	1-101-004-00	CERAMIC 0.01MF	50V			<u>IC</u>	
C105	1-101-004-00	CERAMIC 0.01MF	50V				
C106	1-101-004-00	CERAMIC 0.01MF	50V	IC1	8-759-240-53	IC TC4053BP	
C107	1-101-004-00	CERAMIC 0.01MF	50V	IC2	8-759-145-58	IC UPC4558C	
C108	1-101-004-00	CERAMIC 0.01MF	50V	IC3	8-759-240-53	IC TC4053BP	
				IC4	8-759-240-53	IC TC4053BP	
C109	1-101-004-00	CERAMIC 0.01MF	50V	IC5	8-759-145-58	IC UPC4558C	
C110	1-101-004-00	CERAMIC 0.01MF	50V				
C111	1-161-059-00	CERAMIC 0.047MF 10%	25V	IC6	8-759-240-53	IC TC4053BP	
C112	1-161-059-00	CERAMIC 0.047MF 10%	25V	IC7	8-759-240-53	IC TC4053BP	
C113	1-161-059-00	CERAMIC 0.047MF 10%	25V	IC8	8-759-145-58	IC UPC4558C	
				IC9	8-759-240-53	IC TC4053BP	
C114	1-101-004-00	CERAMIC 0.01MF	50V	IC10	8-759-240-53	IC TC4053BP	
C115	1-101-004-00	CERAMIC 0.01MF	50V				
C116	1-101-004-00	CERAMIC 0.01MF	50V	IC11	8-759-145-58	IC UPC4558C	
C117	1-101-004-00	CERAMIC 0.01MF	50V			<u>TRANSISTOR</u>	
C118	1-101-004-00	CERAMIC 0.01MF	50V				
C119	1-101-004-00	CERAMIC 0.01MF	50V	Q1	8-765-212-20	TRANSISTOR 2SA925	
C120	1-101-004-00	CERAMIC 0.01MF	50V	Q2	8-765-300-00	TRANSISTOR 2SC2009	
C121	1-102-503-00	CERAMIC 3PF 0.25PF	50V	Q3	8-765-212-20	TRANSISTOR 2SA925	
C122	1-102-503-00	CERAMIC 3PF 0.25PF	50V	Q4	8-765-212-20	TRANSISTOR 2SA925	
C123	1-102-503-00	CERAMIC 3PF 0.25PF	50V	Q5	8-765-300-00	TRANSISTOR 2SC2009	
C124	1-101-004-00	CERAMIC 0.01MF	50V	Q6	8-765-300-00	TRANSISTOR 2SC2009	
C125	1-101-004-00	CERAMIC 0.01MF	50V	Q7	8-765-300-00	TRANSISTOR 2SC2009	
C126	1-101-004-00	CERAMIC 0.01MF	50V	Q8	8-765-212-20	TRANSISTOR 2SA925	
		<u>TRIMMER</u>		Q9	8-765-300-00	TRANSISTOR 2SC2009	
CV1	1-141-138-XX	CAP, TRIMMER, 5PF-8PF		Q10	8-765-300-00	TRANSISTOR 2SC2009	
CV2	1-141-181-11	CAP, TRIMMER		Q11	8-769-192-00	TRANSISTOR 2SK43-2	
CV3	1-141-138-XX	CAP, TRIMMER, 5PF-8PF		Q12	8-765-300-00	TRANSISTOR 2SC2009	
CV4	1-141-181-11	CAP, TRIMMER		Q13	8-765-212-20	TRANSISTOR 2SA925	
CV5	1-141-138-XX	CAP, TRIMMER, 5PF-8PF		Q14	8-765-300-00	TRANSISTOR 2SC2009	
CV6	1-141-181-11	CAP, TRIMMER		Q15	8-765-300-00	TRANSISTOR 2SC2009	
		<u>DIODE</u>		Q16	8-765-212-20	TRANSISTOR 2SA925	
D1	8-719-102-68	DIODE RD5.1E-N2		Q17	8-765-300-00	TRANSISTOR 2SC2009	
D2	8-719-102-97	DIODE RD12E-N2		Q18	8-765-300-00	TRANSISTOR 2SC2009	
D3	8-719-815-55	DIODE 1S1555		Q19	8-769-192-00	TRANSISTOR 2SK43-2	
D4	8-719-815-55	DIODE 1S1555		Q20	8-765-212-20	TRANSISTOR 2SA925	
D5	8-719-102-68	DIODE RD5.1E-N2		Q21	8-765-300-00	TRANSISTOR 2SC2009	
D6	8-719-102-97	DIODE RD12E-N2		Q22	8-765-212-20	TRANSISTOR 2SA925	
D7	8-719-815-55	DIODE 1S1555		Q23	8-765-212-20	TRANSISTOR 2SA925	
D8	8-719-815-55	DIODE 1S1555		Q24	8-765-300-00	TRANSISTOR 2SC2009	
D9	8-719-102-68	DIODE RD5.1E-N2		Q25	8-765-300-00	TRANSISTOR 2SC2009	
D10	8-719-102-97	DIODE RD12E-N2		Q26	8-765-300-00	TRANSISTOR 2SC2009	
D11	8-719-815-55	DIODE 1S1555		Q27	8-765-212-20	TRANSISTOR 2SA925	
D12	8-719-815-55	DIODE 1S1555		Q28	8-765-300-00	TRANSISTOR 2SC2009	
D13	8-719-815-55	DIODE 1S1555		Q29	8-765-300-00	TRANSISTOR 2SC2009	
D14	8-719-815-55	DIODE 1S1555		Q30	8-769-192-00	TRANSISTOR 2SK43-2	
D15	8-719-815-55	DIODE 1S1555		Q31	8-765-300-00	TRANSISTOR 2SC2009	
D16	8-719-815-55	DIODE 1S1555		Q32	8-765-212-20	TRANSISTOR 2SA925	
D17	8-719-815-55	DIODE 1S1555		Q33	8-765-300-00	TRANSISTOR 2SC2009	
				Q34	8-765-300-00	TRANSISTOR 2SC2009	
				Q35	8-765-212-20	TRANSISTOR 2SA925	
				Q36	8-765-300-00	TRANSISTOR 2SC2009	
				Q37	8-765-300-00	TRANSISTOR 2SC2009	
				Q38	8-769-192-00	TRANSISTOR 2SK43-2	

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
Q39	8-765-212-20	TRANSISTOR 2SA925		R30	1-249-429-11	CARBON 10K 5% 1/6W	
Q40	8-765-300-00	TRANSISTOR 2SC2009		R31	1-247-783-00	CARBON 10 5% 1/6W	
Q41	8-765-212-20	TRANSISTOR 2SA925		R32	1-249-425-11	CARBON 4.7K 5% 1/6W	
Q42	8-765-212-20	TRANSISTOR 2SA925		R33	1-249-419-11	CARBON 1.5K 5% 1/6W	
Q43	8-765-300-00	TRANSISTOR 2SC2009		R34	1-214-163-00	METAL 20K 1% 1/4W	
Q44	8-765-300-00	TRANSISTOR 2SC2009		R35	1-214-166-00	METAL 27K 1% 1/4W	
Q45	8-765-300-00	TRANSISTOR 2SC2009		R36	1-214-106-00	METAL 82 1% 1/4W	
Q46	8-765-212-20	TRANSISTOR 2SA925		R37	1-214-173-00	METAL 51K 1% 1/4W	
Q47	8-765-300-00	TRANSISTOR 2SC2009		R38	1-214-163-00	METAL 20K 1% 1/4W	
Q48	8-765-300-00	TRANSISTOR 2SC2009		R39	1-214-134-00	METAL 1.2K 1% 1/4W	
Q49	8-769-192-00	TRANSISTOR 2SK43-2		R40	1-214-180-00	METAL 100K 1% 1/4W	
Q50	8-765-300-00	TRANSISTOR 2SC2009		R41	1-214-148-00	METAL 4.7K 1% 1/4W	
Q51	8-765-212-20	TRANSISTOR 2SA925		R42	1-214-147-00	METAL 4.3K 1% 1/4W	
Q52	8-765-300-00	TRANSISTOR 2SC2009		R43	1-247-837-00	CARBON 1.8K 5% 1/6W	
Q53	8-765-300-00	TRANSISTOR 2SC2009		R44	1-249-429-11	CARBON 10K 5% 1/6W	
Q54	8-765-212-20	TRANSISTOR 2SA925		R45	1-249-429-11	CARBON 10K 5% 1/6W	
Q55	8-765-300-00	TRANSISTOR 2SC2009		R46	1-247-837-00	CARBON 1.8K 5% 1/6W	
Q56	8-765-300-00	TRANSISTOR 2SC2009		R47	1-247-815-00	CARBON 220 5% 1/6W	
Q57	8-769-192-00	TRANSISTOR 2SK43-2		R48	1-214-126-00	METAL 560 1% 1/4W	
Q58	8-765-300-00	TRANSISTOR 2SC2009		R49	1-247-840-00	CARBON 2.4K 5% 1/6W	
Q59	8-765-212-20	TRANSISTOR 2SA925		R50	1-214-119-00	METAL 300 1% 1/4W	
Q60	8-765-212-20	TRANSISTOR 2SA925		R51	1-214-138-00	METAL 1.8K 1% 1/4W	
Q61	8-765-300-00	TRANSISTOR 2SC2009		R52	1-247-842-00	CARBON 3K 5% 1/6W	
RESISTOR				R53	1-214-119-00	METAL 300 1% 1/4W	
R1	1-247-807-00	CARBON 100 5% 1/6W		R54	1-249-429-11	CARBON 10K 5% 1/6W	
R2	1-247-807-00	CARBON 100 5% 1/6W		R55	1-202-473-00	SOLID 5.6M 5% 1/4W	
R3	1-214-180-00	METAL 100K 1% 1/4W		R56	1-249-429-11	CARBON 10K 5% 1/6W	
R4	1-214-113-00	METAL 160 1% 1/4W		R57	1-249-429-11	CARBON 10K 5% 1/6W	
R5	1-249-425-11	CARBON 4.7K 5% 1/6W		R58	1-247-807-00	CARBON 100 5% 1/6W	
R6	1-249-425-11	CARBON 4.7K 5% 1/6W		R59	1-247-879-00	CARBON 100K 5% 1/6W	
R7	1-249-419-11	CARBON 1.5K 5% 1/6W		R60	1-247-879-00	CARBON 100K 5% 1/6W	
R8	1-214-147-00	METAL 4.3K 1% 1/4W		R61	1-247-807-00	CARBON 100 5% 1/6W	
R9	1-249-419-11	CARBON 1.5K 5% 1/6W		R62	1-247-807-00	CARBON 100 5% 1/6W	
R10	1-214-150-00	METAL 5.6K 1% 1/4W		R63	1-214-180-00	METAL 100K 1% 1/4W	
R11	1-214-161-00	METAL 16K 1% 1/4W		R64	1-214-113-00	METAL 160 1% 1/4W	
R13	1-214-147-00	METAL 4.3K 1% 1/4W		R65	1-249-425-11	CARBON 4.7K 5% 1/6W	
R14	1-214-147-00	METAL 4.3K 1% 1/4W		R66	1-249-425-11	CARBON 4.7K 5% 1/6W	
R15	1-214-147-00	METAL 4.3K 1% 1/4W		R67	1-249-419-11	CARBON 1.5K 5% 1/6W	
R16	1-247-807-00	CARBON 100 5% 1/6W		R68	1-214-147-00	METAL 4.3K 1% 1/4W	
R17	1-247-826-00	CARBON 620 5% 1/6W		R69	1-249-419-11	CARBON 1.5K 5% 1/6W	
R18	1-247-857-00	CARBON 12K 5% 1/6W		R70	1-214-168-00	METAL 33K 1% 1/4W	
R19	1-249-425-11	CARBON 4.7K 5% 1/6W		R72	1-214-169-00	METAL 36K 1% 1/4W	
R20	1-249-421-11	CARBON 2.2K 5% 1/6W		R73	1-214-147-00	METAL 4.3K 1% 1/4W	
R21	1-247-819-00	CARBON 330 5% 1/6W		R74	1-214-147-00	METAL 4.3K 1% 1/4W	
R22	1-247-829-00	CARBON 820 5% 1/6W		R75	1-214-147-00	METAL 4.3K 1% 1/4W	
R23	1-247-840-00	CARBON 2.4K 5% 1/6W		R76	1-247-807-00	CARBON 100 5% 1/6W	
R24	1-214-124-00	METAL 470 1% 1/4W		R77	1-247-826-00	CARBON 620 5% 1/6W	
R25	1-247-857-00	CARBON 12K 5% 1/6W		R78	1-247-857-00	CARBON 12K 5% 1/6W	
R26	1-249-425-11	CARBON 4.7K 5% 1/6W		R79	1-249-425-11	CARBON 4.7K 5% 1/6W	
R27	1-249-429-11	CARBON 10K 5% 1/6W		R80	1-249-421-11	CARBON 2.2K 5% 1/6W	
R28	1-202-473-00	SOLID 5.6M 5% 1/4W		R81	1-247-819-00	CARBON 330 5% 1/6W	
R29	1-249-429-11	CARBON 10K 5% 1/6W		R82	1-247-829-00	CARBON 820 5% 1/6W	
				R83	1-247-840-00	CARBON 2.4K 5% 1/6W	

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R84	1-214-124-00	METAL	470 1% 1/4W	R138	1-247-857-00	CARBON	12K 5% 1/6W
R85	1-247-857-00	CARBON	12K 5% 1/6W	R139	1-249-425-11	CARBON	4.7K 5% 1/6W
R86	1-249-425-11	CARBON	4.7K 5% 1/6W	R140	1-249-421-11	CARBON	2.2K 5% 1/6W
R87	1-249-429-11	CARBON	10K 5% 1/6W	R141	1-247-819-00	CARBON	330 5% 1/6W
R88	1-202-473-00	SOLID	5.6M 5% 1/4W	R142	1-247-829-00	CARBON	820 5% 1/6W
R89	1-249-429-11	CARBON	10K 5% 1/6W	R143	1-247-840-00	CARBON	2.4K 5% 1/6W
R90	1-249-429-11	CARBON	10K 5% 1/6W	R144	1-214-124-00	METAL	470 1% 1/4W
R91	1-247-783-00	CARBON	10 5% 1/6W	R145	1-247-857-00	CARBON	12K 5% 1/6W
R92	1-249-425-11	CARBON	4.7K 5% 1/6W	R146	1-249-425-11	CARBON	4.7K 5% 1/6W
R93	1-249-419-11	CARBON	1.5K 5% 1/6W	R147	1-249-429-11	CARBON	10K 5% 1/6W
R94	1-214-163-00	METAL	20K 1% 1/4W	R148	1-202-473-00	SOLID	5.6M 5% 1/4W
R95	1-214-166-00	METAL	27K 1% 1/4W	R149	1-249-429-11	CARBON	10K 5% 1/6W
R96	1-214-106-00	METAL	82 1% 1/4W	R150	1-249-429-11	CARBON	10K 5% 1/6W
R97	1-214-173-00	METAL	51K 1% 1/4W	R151	1-247-783-00	CARBON	10 5% 1/6W
R98	1-214-163-00	METAL	20K 1% 1/4W	R152	1-249-425-11	CARBON	4.7K 5% 1/6W
R99	1-214-134-00	METAL	1.2K 1% 1/4W	R153	1-249-419-11	CARBON	1.5K 5% 1/6W
R100	1-214-180-00	METAL	100K 1% 1/4W	R154	1-214-163-00	METAL	20K 1% 1/4W
R101	1-214-148-00	METAL	4.7K 1% 1/4W	R155	1-214-166-00	METAL	27K 1% 1/4W
R102	1-214-147-00	METAL	4.3K 1% 1/4W	R156	1-214-106-00	METAL	82 1% 1/4W
R103	1-247-837-00	CARBON	1.8K 5% 1/6W	R157	1-214-173-00	METAL	51K 1% 1/4W
R104	1-249-429-11	CARBON	10K 5% 1/6W	R158	1-214-163-00	METAL	20K 1% 1/4W
R105	1-249-429-11	CARBON	10K 5% 1/6W	R159	1-214-134-00	METAL	1.2K 1% 1/4W
R106	1-247-837-00	CARBON	1.8K 5% 1/6W	R160	1-214-180-00	METAL	100K 1% 1/4W
R107	1-247-815-00	CARBON	220 5% 1/6W	R161	1-214-148-00	METAL	4.7K 1% 1/4W
R108	1-214-126-00	METAL	560 1% 1/4W	R162	1-214-147-00	METAL	4.3K 1% 1/4W
R109	1-247-840-00	CARBON	2.4K 5% 1/6W	R163	1-247-837-00	CARBON	1.8K 5% 1/6W
R110	1-214-119-00	METAL	300 1% 1/4W	R164	1-249-429-11	CARBON	10K 5% 1/6W
R111	1-214-138-00	METAL	1.8K 1% 1/4W	R165	1-249-429-11	CARBON	10K 5% 1/6W
R112	1-247-842-00	CARBON	3K 5% 1/6W	R166	1-247-837-00	CARBON	1.8K 5% 1/6W
R113	1-214-119-00	METAL	300 1% 1/4W	R167	1-247-815-00	CARBON	220 5% 1/6W
R114	1-249-429-11	CARBON	10K 5% 1/6W	R168	1-214-126-00	METAL	560 1% 1/4W
R115	1-202-473-00	SOLID	5.6M 5% 1/4W	R169	1-247-840-00	CARBON	2.4K 5% 1/6W
R116	1-249-429-11	CARBON	10K 5% 1/6W	R170	1-214-119-00	METAL	300 1% 1/4W
R117	1-249-429-11	CARBON	10K 5% 1/6W	R171	1-214-138-00	METAL	1.8K 1% 1/4W
R118	1-247-807-00	CARBON	100 5% 1/6W	R172	1-247-842-00	CARBON	3K 5% 1/6W
R119	1-247-879-00	CARBON	100K 5% 1/6W	R173	1-214-119-00	METAL	300 1% 1/4W
R120	1-247-879-00	CARBON	100K 5% 1/6W	R174	1-249-429-11	CARBON	10K 5% 1/6W
R121	1-247-807-00	CARBON	100 5% 1/6W	R175	1-202-473-00	SOLID	5.6M 5% 1/4W
R122	1-247-807-00	CARBON	100 5% 1/6W	R176	1-249-429-11	CARBON	10K 5% 1/6W
R123	1-214-180-00	METAL	100K 1% 1/4W	R177	1-249-429-11	CARBON	10K 5% 1/6W
R124	1-214-113-00	METAL	160 1% 1/4W	R178	1-247-807-00	CARBON	100 5% 1/6W
R125	1-249-425-11	CARBON	4.7K 5% 1/6W	R179	1-247-879-00	CARBON	100K 5% 1/6W
R126	1-249-425-11	CARBON	4.7K 5% 1/6W	R180	1-247-879-00	CARBON	100K 5% 1/6W
R127	1-249-419-11	CARBON	1.5K 5% 1/6W	R181	1-247-807-00	CARBON	100 5% 1/6W
R128	1-214-147-00	METAL	4.3K 1% 1/4W	R182	1-249-419-11	CARBON	1.5K 5% 1/6W
R129	1-249-419-11	CARBON	1.5K 5% 1/6W	R183	1-249-419-11	CARBON	1.5K 5% 1/6W
R130	1-247-885-00	CARBON	180K 5% 1/6W	R184	1-215-441-00	METAL	6.8K 1% 1/6W
R131	1-214-164-00	METAL	22K 1% 1/4W	R185	1-214-170-00	METAL	39K 1% 1/4W
R133	1-214-147-00	METAL	4.3K 1% 1/4W	R186	1-214-106-00	METAL	82 1% 1/4W
R134	1-214-147-00	METAL	4.3K 1% 1/4W	R187	1-214-173-00	METAL	51K 1% 1/4W
R135	1-214-147-00	METAL	4.3K 1% 1/4W	R188	1-214-163-00	METAL	20K 1% 1/4W
R136	1-247-807-00	CARBON	100 5% 1/6W	R189	1-214-134-00	METAL	1.2K 1% 1/4W
R137	1-247-826-00	CARBON	620 5% 1/6W	R190	1-214-180-00	METAL	100K 1% 1/4W

BG

BF

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R191	1-247-807-00	CARBON 100 5% 1/6W		C17	1-123-318-00	ELECT 33MF 20% 16V	
R192	1-214-131-00	METAL 910 1% 1/4W		C18	1-109-667-00	MICA 56PF 1% 500V	
R193	1-249-421-11	CARBON 2.2K 5% 1/6W		C19	1-109-681-71	MICA 220PF 1% 500V	
R194	1-214-156-00	METAL 10K 1% 1/4W		C20	1-102-864-00	CERAMIC 5PF 0.5PF 50V	
R195	1-249-429-11	CARBON 10K 5% 1/6W		C21	1-123-332-00	ELECT 47MF 20% 16V	
R196	1-249-425-11	CARBON 4.7K 5% 1/6W		C22	1-123-332-00	ELECT 47MF 20% 16V	
R197	1-249-429-11	CARBON 10K 5% 1/6W		C23	1-102-406-00	CERAMIC 2PF 0.25PF 50V	
R198	1-247-866-00	CARBON 30K 5% 1/6W		C24	1-123-332-00	ELECT 47MF 20% 16V	
R199	1-249-429-11	CARBON 10K 5% 1/6W		C25	1-101-004-00	CERAMIC 0.01MF 50V	
R200	1-214-180-00	METAL 100K 1% 1/4W		C26	1-101-004-00	CERAMIC 0.01MF 50V	
R201	1-214-174-00	METAL 56K 1% 1/4W		C27	1-101-004-00	CERAMIC 0.01MF 50V	
R202	1-214-150-00	METAL 5.6K 1% 1/4W		C28	1-101-004-00	CERAMIC 0.01MF 50V	
VARIABLE RESISTOR				C29	1-123-356-00	ELECT 10MF 20% 16V	
RV1	1-228-310-00	RES, ADJ, CERMET 50K		C30	1-102-516-00	CERAMIC 27PF 5% 50V	
RV2	1-228-310-00	RES, ADJ, CERMET 50K		C31	1-102-513-00	CERAMIC 18PF 5% 50V	
RV3	1-228-310-00	RES, ADJ, CERMET 50K		C32	1-101-004-00	CERAMIC 0.01MF 50V	
RV4	1-228-302-00	RES, ADJ, CERMET 100		C33	1-101-004-00	CERAMIC 0.01MF 50V	
RV5	1-228-310-00	RES, ADJ, CERMET 50K		C34	1-123-356-00	ELECT 10MF 20% 16V	
RV6	1-228-310-00	RES, ADJ, CERMET 50K		C35	1-123-356-00	ELECT 10MF 20% 16V	
RV7	1-228-310-00	RES, ADJ, CERMET 50K		C36	1-101-004-00	CERAMIC 0.01MF 50V	
RV8	1-228-302-00	RES, ADJ, CERMET 100		C37	1-101-004-00	CERAMIC 0.01MF 50V	
RV9	1-228-310-00	RES, ADJ, CERMET 50K		C38	1-101-004-00	CERAMIC 0.01MF 50V	
RV10	1-228-310-00	RES, ADJ, CERMET 50K		C39	1-123-379-00	ELECT 0.47MF 20% 50V	
RV11	1-228-310-00	RES, ADJ, CERMET 50K		C40	1-123-356-00	ELECT 10MF 20% 16V	
RV12	1-228-302-00	RES, ADJ, CERMET 100		C41	1-101-004-00	CERAMIC 0.01MF 50V	
RV13	1-228-310-00	RES, ADJ, CERMET 50K		C42	1-123-356-00	ELECT 10MF 20% 16V	
RV14	1-228-310-00	RES, ADJ, CERMET 50K		C43	1-123-356-00	ELECT 10MF 20% 16V	
RV15	1-228-303-00	RES, ADJ, CERMET 200		C44	1-123-318-00	ELECT 33MF 20% 16V	
*****				C45	1-109-667-00	MICA 56PF 1% 500V	
*****				C46	1-109-681-71	MICA 220PF 1% 500V	
*****				C47	1-102-864-00	CERAMIC 5PF 0.5PF 50V	
*****				C48	1-123-332-00	ELECT 47MF 20% 16V	
*****				C49	1-123-332-00	ELECT 47MF 20% 16V	
*****				C50	1-102-406-00	CERAMIC 2PF 0.25PF 50V	
*****				C51	1-123-332-00	ELECT 47MF 20% 16V	
*****				C52	1-102-864-00	CERAMIC 5PF 0.5PF 50V	
*****				C53	1-101-004-00	CERAMIC 0.01MF 50V	
*****				C54	1-101-004-00	CERAMIC 0.01MF 50V	
*****				C55	1-101-004-00	CERAMIC 0.01MF 50V	
*****				C56	1-101-004-00	CERAMIC 0.01MF 50V	
*****				C57	1-102-864-00	CERAMIC 5PF 0.5PF 50V	
*****				C58	1-123-332-00	ELECT 47MF 20% 16V	
*****				C59	1-101-004-00	CERAMIC 0.01MF 50V	
*****				C60	1-101-004-00	CERAMIC 0.01MF 50V	
*****				C61	1-101-004-00	CERAMIC 0.01MF 50V	
*****				C62	1-101-004-00	CERAMIC 0.01MF 50V	
*****				C63	1-101-004-00	CERAMIC 0.01MF 50V	
*****				C64	1-101-004-00	CERAMIC 0.01MF 50V	
*****				C65	1-102-965-00	CERAMIC 39PF 5% 50V	
*****				C66	1-102-935-00	CERAMIC 2PF 0.25PF 50V	
*****				C67	1-102-951-00	CERAMIC 15PF 5% 50V	
*****				C68	1-101-884-00	CERAMIC 56PF 5% 50V	
*****				C69	1-101-884-00	CERAMIC 56PF 5% 50V	
*****				C70	1-101-884-00	CERAMIC 56PF 5% 50V	
*****				C71	1-102-518-00	CERAMIC 33PF 5% 50V	

*A-1135-294-A BF BOARD, COMPLETE

*4-347-110-00 CASE, SHIELD

*4-353-708-00 HOOK, FINGER

CAPACITOR

C1	1-123-356-00	ELECT	10MF	20%	16V
C2	1-102-516-00	CERAMIC	27PF	5%	50V
C3	1-101-004-00	CERAMIC	0.01MF		50V
C4	1-123-356-00	ELECT	10MF	20%	16V
C5	1-102-513-00	CERAMIC	18PF	5%	50V
C6	1-101-004-00	CERAMIC	0.01MF		50V
C7	1-123-356-00	ELECT	10MF	20%	16V
C8	1-101-004-00	CERAMIC	0.01MF		50V
C9	1-101-004-00	CERAMIC	0.01MF		50V
C10	1-101-004-00	CERAMIC	0.01MF		50V
C11	1-123-379-00	ELECT	0.47MF	20%	50V
C12	1-123-356-00	ELECT	10MF	20%	16V
C13	1-101-004-00	CERAMIC	0.01MF		50V
C14	1-123-356-00	ELECT	10MF	20%	16V
C15	1-123-356-00	ELECT	10MF	20%	16V

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C72	1-101-004-00	CERAMIC 0.01MF	50V	TRANSISTOR			
C73	1-102-942-00	CERAMIC 5PF	1PF 50V	Q1	8-729-603-50	TRANSISTOR 2SC403SP	
C74	1-101-004-00	CERAMIC 0.01MF	50V	Q2	8-729-384-48	TRANSISTOR 2SA844	
C101	1-123-356-00	ELECT 10MF	20% 16V	Q3	8-729-384-48	TRANSISTOR 2SA844	
C102	1-123-356-00	ELECT 10MF	20% 16V	Q4	8-729-603-50	TRANSISTOR 2SC403SP	
C103	1-123-356-00	ELECT 10MF	20% 16V	Q5	8-769-192-00	TRANSISTOR 2SK43-2	
C104	1-123-356-00	ELECT 10MF	20% 16V	Q6	8-729-603-50	TRANSISTOR 2SC403SP	
C105	1-123-356-00	ELECT 10MF	20% 16V	Q7	8-729-384-48	TRANSISTOR 2SA844	
C106	1-123-332-00	ELECT 47MF	20% 16V	Q8	8-729-603-50	TRANSISTOR 2SC403SP	
C107	1-123-356-00	ELECT 10MF	20% 16V	Q9	8-729-384-48	TRANSISTOR 2SA844	
C108	1-123-356-00	ELECT 10MF	20% 16V	Q10	8-729-603-50	TRANSISTOR 2SC403SP	
C111	1-123-356-00	ELECT 10MF	20% 16V	Q11	8-729-603-50	TRANSISTOR 2SC403SP	
C112	1-123-356-00	ELECT 10MF	20% 16V	Q12	8-729-603-50	TRANSISTOR 2SC403SP	
C113	1-123-356-00	ELECT 10MF	20% 16V	Q13	8-769-192-00	TRANSISTOR 2SK43-2	
C114	1-123-356-00	ELECT 10MF	20% 16V	Q14	8-729-603-50	TRANSISTOR 2SC403SP	
C115	1-123-356-00	ELECT 10MF	20% 16V	Q15	8-729-384-48	TRANSISTOR 2SA844	
C116	1-123-356-00	ELECT 10MF	20% 16V	Q16	8-729-384-48	TRANSISTOR 2SA844	
C117	1-123-356-00	ELECT 10MF	20% 16V	Q17	8-729-603-50	TRANSISTOR 2SC403SP	
C118	1-123-356-00	ELECT 10MF	20% 16V	Q18	8-769-192-00	TRANSISTOR 2SK43-2	
C121	1-101-004-00	CERAMIC 0.01MF	50V	Q19	8-729-603-50	TRANSISTOR 2SC403SP	
C122	1-101-004-00	CERAMIC 0.01MF	50V	Q20	8-729-384-48	TRANSISTOR 2SA844	
C123	1-101-004-00	CERAMIC 0.01MF	50V	Q21	8-729-603-50	TRANSISTOR 2SC403SP	
C124	1-101-004-00	CERAMIC 0.01MF	50V	Q22	8-729-384-48	TRANSISTOR 2SA844	
C125	1-101-004-00	CERAMIC 0.01MF	50V	Q23	8-729-603-50	TRANSISTOR 2SC403SP	
C131	1-101-004-00	CERAMIC 0.01MF	50V	Q24	8-729-603-50	TRANSISTOR 2SC403SP	
C150	1-102-953-00	CERAMIC 18PF	5% 50V	Q25	8-729-603-50	TRANSISTOR 2SC403SP	
C151	1-102-953-00	CERAMIC 18PF	5% 50V	Q26	8-769-192-00	TRANSISTOR 2SK43-2	
C152	1-102-953-00	CERAMIC 18PF	5% 50V	Q27	8-729-603-50	TRANSISTOR 2SC403SP	
DIODE				Q28	8-729-384-48	TRANSISTOR 2SA844	
D1	8-719-911-19	DIODE 1SS119		Q29	8-729-603-50	TRANSISTOR 2SC403SP	
D2	8-719-143-07	DIODE RD4.3E-B		Q30	8-729-603-50	TRANSISTOR 2SC403SP	
D3	8-719-911-19	DIODE 1SS119		Q31	8-729-603-50	TRANSISTOR 2SC403SP	
D4	8-719-143-07	DIODE RD4.3E-B		Q32	8-769-192-00	TRANSISTOR 2SK43-2	
D5	8-719-143-07	DIODE RD4.3E-B		Q33	8-729-384-48	TRANSISTOR 2SA844	
D6	8-719-143-07	DIODE RD4.3E-B		Q34	8-729-603-50	TRANSISTOR 2SC403SP	
D7	8-719-143-07	DIODE RD4.3E-B		Q35	8-729-384-48	TRANSISTOR 2SA844	
IC				Q36	8-729-384-48	TRANSISTOR 2SA844	
IC1	8-759-145-58	IC UPC4558C		RESISTOR			
IC2	8-759-201-69	IC TL8608P		R1	1-247-807-00	CARBON 100 5% 1/6W	
IC3	8-751-300-00	IC CX130		R2	1-249-437-11	CARBON 47K 5% 1/6W	
IC4	8-759-145-58	IC UPC4558C		R3	1-247-863-00	CARBON 22K 5% 1/6W	
IC5	8-759-201-69	IC TL8608P		R4	1-247-833-00	CARBON 1.2K 5% 1/6W	
IC6	8-751-300-00	IC CX130		R5	1-247-833-00	CARBON 1.2K 5% 1/6W	
IC7	8-759-145-58	IC UPC4558C		R6	1-247-842-00	CARBON 3K 5% 1/6W	
COIL				R7	1-249-429-11	CARBON 10K 5% 1/6W	
L1	1-408-421-00	MICRO INDUCTOR 100UH		R8	1-249-429-11	CARBON 10K 5% 1/6W	
L2	1-408-421-00	MICRO INDUCTOR 100UH		R9	1-202-473-00	SOL ID 5.6M 5% 1/4W	
L3	1-408-421-00	MICRO INDUCTOR 100UH		R10	1-215-447-00	METAL 12K 1% 1/6W	
L4	1-408-421-00	MICRO INDUCTOR 100UH		R11	1-215-433-00	METAL 3.3K 1% 1/6W	
L5	1-408-421-00	MICRO INDUCTOR 100UH		R12	1-215-445-00	METAL 10K 1% 1/6W	
				R13	1-247-815-00	CARBON 220 5% 1/6W	

BF

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R14	1-215-445-00	METAL 10K 1% 1/6W		R70	1-215-434-00	METAL 3.6K 1% 1/6W	
R15	1-215-433-00	METAL 3.3K 1% 1/6W		R71	1-215-437-00	METAL 4.7K 1% 1/6W	
R16	1-215-447-00	METAL 12K 1% 1/6W		R72	1-215-437-00	METAL 4.7K 1% 1/6W	
R17	1-247-903-00	CARBON 1M 5% 1/6W		R73	1-247-807-00	CARBON 100 5% 1/6W	
R18	1-247-863-00	CARBON 22K 5% 1/6W		R74	1-215-421-00	METAL 1K 1% 1/6W	
R19	1-247-841-00	CARBON 2.7K 5% 1/6W		R76	1-215-425-00	METAL 1.5K 1% 1/6W	
R20	1-215-424-00	METAL 1.3K 1% 1/6W		R77	1-247-841-00	CARBON 2.7K 5% 1/6W	
R21	1-215-422-00	METAL 1.1K 1% 1/6W		R78	1-249-421-11	CARBON 2.2K 5% 1/6W	
R22	1-215-426-00	METAL 1.6K 1% 1/6W		R79	1-249-429-11	CARBON 10K 5% 1/6W	
R23	1-247-841-00	CARBON 2.7K 5% 1/6W		R81	1-247-850-00	CARBON 6.2K 5% 1/6W	
R24	1-215-436-00	METAL 4.3K 1% 1/6W		R82	1-215-430-00	METAL 2.4K 1% 1/6W	
R25	1-215-437-00	METAL 4.7K 1% 1/6W		R83	1-247-845-00	CARBON 3.9K 5% 1/6W	
R26	1-215-437-00	METAL 4.7K 1% 1/6W		R84	1-247-807-00	CARBON 100 5% 1/6W	
R27	1-247-807-00	CARBON 100 5% 1/6W		R85	1-249-429-11	CARBON 10K 5% 1/6W	
R28	1-215-421-00	METAL 1K 1% 1/6W		R86	1-249-429-11	CARBON 10K 5% 1/6W	
R30	1-215-425-00	METAL 1.5K 1% 1/6W		R87	1-247-834-00	CARBON 1.3K 5% 1/6W	
R31	1-247-841-00	CARBON 2.7K 5% 1/6W		R88	1-249-429-11	CARBON 10K 5% 1/6W	
R32	1-249-421-11	CARBON 2.2K 5% 1/6W		R89	1-249-421-11	CARBON 2.2K 5% 1/6W	
R33	1-249-429-11	CARBON 10K 5% 1/6W		R90	1-247-831-00	CARBON 1K 5% 1/6W	
R35	1-247-850-00	CARBON 6.2K 5% 1/6W		R91	1-249-429-11	CARBON 10K 5% 1/6W	
R36	1-215-423-00	METAL 1.2K 1% 1/6W		R92	1-202-473-00	SOLID 5.6M 5% 1/4W	
R37	1-247-845-00	CARBON 3.9K 5% 1/6W		R93	1-215-425-00	METAL 1.5K 1% 1/6W	
R38	1-247-807-00	CARBON 100 5% 1/6W		R94	1-215-432-00	METAL 3K 1% 1/6W	
R39	1-249-429-11	CARBON 10K 5% 1/6W		R95	1-247-850-00	CARBON 6.2K 5% 1/6W	
R40	1-249-429-11	CARBON 10K 5% 1/6W		R96	1-215-414-00	METAL 510 1% 1/6W	
R41	1-247-834-00	CARBON 1.3K 5% 1/6W		R97	1-247-845-00	CARBON 3.9K 5% 1/6W	
R42	1-249-429-11	CARBON 10K 5% 1/6W		R98	1-247-807-00	CARBON 100 5% 1/6W	
R44	1-247-831-00	CARBON 1K 5% 1/6W		R99	1-249-429-11	CARBON 10K 5% 1/6W	
R45	1-249-429-11	CARBON 10K 5% 1/6W		R100	1-249-429-11	CARBON 10K 5% 1/6W	
R46	1-202-473-00	SOLID 5.6M 5% 1/4W		R101	1-247-834-00	CARBON 1.3K 5% 1/6W	
R47	1-247-807-00	CARBON 100 5% 1/6W		R102	1-249-429-11	CARBON 10K 5% 1/6W	
R48	1-249-437-11	CARBON 47K 5% 1/6W		R103	1-249-429-11	CARBON 10K 5% 1/6W	
R49	1-247-863-00	CARBON 22K 5% 1/6W		R104	1-247-831-00	CARBON 1K 5% 1/6W	
R50	1-247-833-00	CARBON 1.2K 5% 1/6W		R105	1-202-473-00	SOLID 5.6M 5% 1/4W	
R51	1-247-833-00	CARBON 1.2K 5% 1/6W		R106	1-249-429-11	CARBON 10K 5% 1/6W	
R52	1-247-842-00	CARBON 3K 5% 1/6W		R107	1-247-831-00	CARBON 1K 5% 1/6W	
R53	1-249-429-11	CARBON 10K 5% 1/6W		R108	1-247-831-00	CARBON 1K 5% 1/6W	
R54	1-249-429-11	CARBON 10K 5% 1/6W		R109	1-247-831-00	CARBON 1K 5% 1/6W	
R55	1-202-473-00	SOLID 5.6M 5% 1/4W		R110	1-247-831-00	CARBON 1K 5% 1/6W	
R56	1-215-447-00	METAL 12K 1% 1/6W		R111	1-247-831-00	CARBON 1K 5% 1/6W	
R57	1-215-433-00	METAL 3.3K 1% 1/6W		R112	1-249-437-11	CARBON 47K 5% 1/6W	
R58	1-215-445-00	METAL 10K 1% 1/6W		R113	1-249-437-11	CARBON 47K 5% 1/6W	
R59	1-247-815-00	CARBON 220 5% 1/6W		R114	1-215-414-00	METAL 510 1% 1/6W	
R60	1-215-445-00	METAL 10K 1% 1/6W		R115	1-215-421-00	METAL 1K 1% 1/6W	
R61	1-215-433-00	METAL 3.3K 1% 1/6W		R116	1-249-429-11	CARBON 10K 5% 1/6W	
R62	1-215-447-00	METAL 12K 1% 1/6W		R118	1-247-807-00	CARBON 100 5% 1/6W	
R63	1-247-903-00	CARBON 1M 5% 1/6W		R119	1-249-425-11	CARBON 4.7K 5% 1/6W	
R64	1-247-863-00	CARBON 22K 5% 1/6W		R121	1-249-425-11	CARBON 4.7K 5% 1/6W	
R65	1-247-841-00	CARBON 2.7K 5% 1/6W		R122	1-249-425-11	CARBON 4.7K 5% 1/6W	
R66	1-215-424-00	METAL 1.3K 1% 1/6W					
R67	1-215-422-00	METAL 1.1K 1% 1/6W					
R68	1-215-426-00	METAL 1.6K 1% 1/6W					
R69	1-247-841-00	CARBON 2.7K 5% 1/6W					

VARIABLE RESISTOR

RV1	1-224-939-00	RES, ADJ, CERMET 5K
RV2	1-224-941-00	RES, ADJ, CERMET 20K

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
RV3	1-224-941-00	RES, ADJ, CERMET 20K		C31	1-106-196-00	MYLAR 0.01MF 10% 100V	
RV4	1-224-937-00	RES, ADJ, CERMET 1K		C32	1-106-196-00	MYLAR 0.01MF 10% 100V	
RV5	1-224-937-00	RES, ADJ, CERMET 1K		C33	1-123-379-00	ELECT 0.47MF 20% 50V	
RV6	1-224-939-00	RES, ADJ, CERMET 5K		C34	1-123-356-00	ELECT 10MF 20% 50V	
RV7	1-224-941-00	RES, ADJ, CERMET 20K		C35	1-108-429-00	MYLAR 0.047MF 10% 200V	
RV8	1-224-941-00	RES, ADJ, CERMET 20K		C36	1-123-356-00	ELECT 10MF 20% 50V	
RV9	1-224-937-00	RES, ADJ, CERMET 1K		C37	1-123-356-00	ELECT 10MF 20% 50V	
RV10	1-224-937-00	RES, ADJ, CERMET 1K		C38	1-123-359-00	ELECT 47MF 20% 50V	
RV11	1-224-938-00	RES, ADJ, CERMET 2K		C39	1-123-359-00	ELECT 47MF 20% 50V	
RV12	1-224-936-00	RES, ADJ, CERMET 500		C40	1-102-074-00	CERAMIC 0.001MF 10% 50V	
RV13	1-224-937-00	RES, ADJ, CERMET 1K		C41	1-106-228-00	MYLAR 0.22MF 10% 100V	
RV14	1-224-937-00	RES, ADJ, CERMET 1K		C42	1-106-228-00	MYLAR 0.22MF 10% 100V	
CRYSTAL				C43	1-108-437-00	MYLAR 0.22MF 10% 200V	
X1	1-567-409-11	VIBRATOR, CRYSTAL		C44	1-129-710-00	FILM 0.0047MF 10% 630V	
*****				C45	1-106-220-00	MYLAR 0.1MF 10% 100V	
*****				C46	1-121-806-00	ELECT 10MF 20% 16V	
*****				C47	1-121-999-00	ELECT 10MF 20% 160V	
*****				C48	1-123-332-00	ELECT 47MF 20% 16V	
*****				C49	1-123-356-00	ELECT 10MF 20% 50V	
*****				C50	1-121-999-00	ELECT 10MF 20% 160V	
*****				C51	1-123-332-00	ELECT 47MF 20% 16V	
*****				C52	1-121-999-00	ELECT 10MF 20% 160V	
*****				C53	1-161-754-00	CERAMIC 0.001MF 10% 3KV	
*****				C54	1-123-932-00	ELECT 4.7MF 20% 160V	
*****				DIODE			
*****				D1	8-719-200-02	DIODE 10E2	
*****				D2	8-719-815-55	DIODE 1S1555	
*****				D3	8-719-200-02	DIODE 10E2	
*****				D4	8-719-928-08	DIODE ERD28-08S	
*****				D5	8-719-928-08	DIODE ERD28-08S	
*****				D6	8-719-815-55	DIODE 1S1555	
*****				D7	8-719-815-55	DIODE 1S1555	
*****				D8	8-759-157-41	IC UPC574J-G	
*****				D9	8-719-912-20	DIODE 1SS120	
*****				D10	8-719-200-02	DIODE 10E2	
*****				D11	8-759-157-41	IC UPC574J-G	
*****				D12	8-719-200-02	DIODE 10E2	
*****				D13	8-719-815-55	DIODE 1S1555	
*****				D14	8-719-103-09	DIODE RD15E-N1	
*****				D15	8-719-200-02	DIODE 10E2	
*****				D16	8-719-100-89	DIODE RD24E-B1	
*****				D17	8-719-300-76	DIODE RH1A	
*****				D18	8-719-300-76	DIODE RH1A	
*****				D19	8-719-300-76	DIODE RH1A	
*****				D20	8-719-300-76	DIODE RH1A	
*****				D21	8-719-815-55	DIODE 1S1555	
*****				D22	8-719-815-55	DIODE 1S1555	
*****				D23	8-719-815-55	DIODE 1S1555	
*****				D24	8-719-815-55	DIODE 1S1555	
*****				IC			
*****				IC1	8-759-145-58	IC UPC4558C	
C1	1-123-332-00	ELECT 47MF 20% 16V					
C2	1-123-343-00	ELECT 33MF 20% 35V					
C3	1-123-024-00	ELECT 33MF 20% 160V					
C4	1-106-220-00	MYLAR 0.1MF 10% 100V					
C5	1-106-172-00	MYLAR 0.001MF 10% 100V					
C6	1-106-220-00	MYLAR 0.1MF 10% 100V					
C7	1-123-932-00	ELECT 4.7MF 20% 160V					
C8	1-108-429-00	MYLAR 0.047MF 10% 200V					
C9	1-102-228-00	CERAMIC 470PF 10% 500V					
C10	1-130-855-00	FILM 0.03MF 3% 1.2KV					
C11	1-130-157-00	FILM 1MF 5% 200V					
C12	1-106-172-00	MYLAR 0.001MF 10% 100V					
C13	1-106-220-00	MYLAR 0.1MF 10% 100V					
C14	1-106-220-00	MYLAR 0.1MF 10% 100V					
C15	1-123-345-00	ELECT 100MF 20% 35V					
C16	1-123-356-00	ELECT 10MF 20% 50V					
C17	1-106-172-00	MYLAR 0.001MF 10% 100V					
C18	1-106-212-00	MYLAR 0.047MF 10% 100V					
C19	1-106-212-00	MYLAR 0.047MF 10% 100V					
C20	1-130-203-00	FILM 0.01MF 5% 50V					
C21	1-102-038-00	CERAMIC 0.001MF 500V					
C22	1-123-343-00	ELECT 33MF 20% 35V					
C23	1-123-357-00	ELECT 22MF 20% 50V					
C24	1-123-345-00	ELECT 100MF 20% 35V					
C25	1-106-196-00	MYLAR 0.01MF 10% 100V					
C26	1-123-357-00	ELECT 22MF 20% 50V					
C27	1-102-074-00	CERAMIC 0.001MF 10% 50V					
C28	1-123-356-00	ELECT 10MF 20% 50V					
C29	1-123-356-00	ELECT 10MF 20% 50V					
C30	1-108-634-11	MYLAR 0.047MF 10% 100V					

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
IC2	8-759-729-03	IC NJM2903D			*4-026-251-00	SPACER, INSULATING; Q17	
IC3	8-759-729-03	IC NJM2903D					
IC4	8-759-729-03	IC NJM2903D					
		<u>COIL</u>				<u>RESISTOR</u>	
L1	1-421-501-00	COIL, FERRITE CHOKE		R1	1-214-156-00	METAL 10K 1% 1/4W	
L3	1-407-365-00	COIL, CHOKE		R2	1-214-156-00	METAL 10K 1% 1/4W	
L4	1-459-119-00	COIL, DUST CORE (ARC)		R3	1-214-164-00	METAL 22K 1% 1/4W	
L5	1-459-119-00	COIL, DUST CORE (ARC)		R4	1-214-156-00	METAL 10K 1% 1/4W	
		<u>CONNECTOR</u>		R5	1-247-224-00	CARBON 220 5% 1/2W	
P1	*1-508-796-00	PIN, CONNECTOR 2P		R6	1-247-224-00	CARBON 220 5% 1/2W	
P2	*1-508-742-00	PIN, CONNECTOR 3P		R7	1-214-140-00	METAL 2.2K 1% 1/4W	
P3	*1-508-742-00	PIN, CONNECTOR 3P		R8	1-214-132-00	METAL 1K 1% 1/4W	
P4	*1-508-797-31	PIN, CONNECTOR 4P		R9	1-206-731-00	METAL OXIDE 1.8K 5% 3W F	
P5	*1-508-845-00	PIN, CONNECTOR 6P		R10	1-212-356-00	METAL OXIDE 0.47 5% 1W F	
P6	*1-508-742-00	PIN, CONNECTOR 3P		R11	1-214-094-00	METAL 27 1% 1/4W	
P7	*1-508-797-31	PIN, CONNECTOR 4P		R12	1-214-180-00	METAL 100K 1% 1/4W	
P8	*1-508-796-00	PIN, CONNECTOR 2P		R13	1-202-443-17	SOLID 330K 5% 1/4W	
P9	*1-508-797-00	PIN, CONNECTOR 4P		R14	1-214-156-00	METAL 10K 1% 1/4W	
P10	*1-508-796-21	PIN, CONNECTOR 2P		R15	1-214-156-00	METAL 10K 1% 1/4W	
P11	*1-508-796-21	PIN, CONNECTOR 2P		R16	1-202-441-17	SOLID 270K 5% 1/4W	
P12	*1-508-743-00	PIN, CONNECTOR 5P		R17	1-214-144-00	METAL 3.3K 1% 1/4W	
P13	*1-508-797-00	PIN, CONNECTOR 4P		R18	1-214-156-00	METAL 10K 1% 1/4W	
P14	1-508-765-00	3P PLUG (M)		R19	1-214-172-00	METAL 47K 1% 1/4W	
		<u>TRANSISTOR</u>		R20	1-214-156-00	METAL 10K 1% 1/4W	
Q1	8-729-600-27	TRANSISTOR 2SC634SP		R21	1-214-156-00	METAL 10K 1% 1/4W	
Q2	8-765-012-20	TRANSISTOR 2SC1811		R22	1-214-148-00	METAL 4.7K 1% 1/4W	
Q3	8-729-372-51	TRANSISTOR 2SD725		R23	1-214-144-00	METAL 3.3K 1% 1/4W	
	3-701-353-00	SPACER, MICA; Q3		R24	1-214-156-00	METAL 10K 1% 1/4W	
	*4-314-938-01	RETAINER (TO-3), TRANSISTOR; Q3		R25	1-214-148-00	METAL 4.7K 1% 1/4W	
Q4	8-726-420-00	THYRISTOR SG-264A		R26	1-214-124-00	METAL 470 1% 1/4W	
	4-303-844-00	SPACER, MICA (4) MD-17; Q4		R27	1-214-108-00	METAL 100 1% 1/4W	
	*4-309-762-00	RETAINER (MD-17), TRANSISTOR; Q4		R28	1-213-135-00	METAL OXIDE 220 5% 1W F	
Q5	8-729-625-91	TRANSISTOR 2SC2259		R29	1-214-140-00	METAL 2.2K 1% 1/4W	
Q6	8-729-103-43	TRANSISTOR 2SB734		R30	1-214-168-00	METAL 33K 1% 1/4W	
Q7	8-729-600-27	TRANSISTOR 2SC634SP		R31	1-213-151-00	METAL OXIDE 4.7K 5% 1W F	
Q8	8-719-000-28	THYRISTOR CRO2AM-8		R32	1-213-151-00	METAL OXIDE 4.7K 5% 1W F	
Q9	8-729-600-27	TRANSISTOR 2SC634SP		R33	1-214-108-00	METAL 100 1% 1/4W	
Q10	8-719-000-28	THYRISTOR CRO2AM-8		R34	1-214-162-00	METAL 18K 1% 1/4W	
Q11	8-729-313-42	TRANSISTOR 2SD1134		✕R35	△	METAL 1/4W	
Q12	8-729-309-08	TRANSISTOR 2SC1890A		✕R36	△	METAL 1/4W	
Q13	8-729-309-08	TRANSISTOR 2SC1890A		✕R37	△	METAL 1/4W	
Q14	8-729-309-08	TRANSISTOR 2SC1890A		R38	1-214-168-00	METAL 33K 1% 1/4W	
Q15	8-729-309-36	TRANSISTOR 2SA893A		R42	1-214-156-00	METAL 10K 1% 1/4W	
Q16	8-729-313-82	TRANSISTOR 2SD1138		R43	1-214-156-00	METAL 10K 1% 1/4W	
	2-832-005-00	BUSHING, (G-2), INSULATOR; Q16		R44	1-214-148-00	METAL 4.7K 1% 1/4W	
	3-618-225-00	NUT, PLATE; Q16		R45	1-214-148-00	METAL 4.7K 1% 1/4W	
	*4-026-251-00	SPACER, INSULATING; Q16		R46	1-214-156-00	METAL 10K 1% 1/4W	
Q17	8-729-386-12	TRANSISTOR 2SB861		R47	1-214-149-00	METAL 5.1K 1% 1/4W	
	2-832-005-00	BUSHING, (G-2), INSULATOR; Q17		R48	1-214-148-00	METAL 4.7K 1% 1/4W	
	3-618-225-00	NUT, PLATE; Q17		R49	1-214-148-00	METAL 4.7K 1% 1/4W	
				R50	△ 1-214-180-11	METAL 100K 1% 1/4W	
				R51	△ 1-202-467-17	SOLID 3.3M 5% 1/4W	
				R52	1-214-180-00	METAL 100K 1% 1/4W	
				R53	1-214-168-00	METAL 33K 1% 1/4W	

• The components identified by ✕ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

The components identified by shading and mark △ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R54	1-214-156-00	METAL	10K 1% 1/4W	T2	1-437-021-00	TRANSFORMER, HORIZONTAL DRIVE	
R55	1-214-156-00	METAL	10K 1% 1/4W	T3	1-407-850-00	DLT	
R56	1-213-151-00	METAL OXIDE	4.7K 5% 1W F	*****			
R57	1-213-151-00	METAL OXIDE	4.7K 5% 1W F				
R58	1-214-164-00	METAL	22K 1% 1/4W				
				*1-605-854-00 X BOARD			

✕R59	△	METAL	1/4W				
✕R60	△	METAL	1/4W				
R61	1-214-168-00	METAL	33K 1% 1/4W	1-518-482-00 LAMP, PILOT (WITH SOCKET)			
R62	1-214-168-00	METAL	33K 1% 1/4W				
R63	1-202-454-17	SOLID	910K 5% 1/4W	*****			
R64	△ 1-214-149-11	METAL	5.1K 1% 1/4W	*1-605-856-00 Z BOARD			
R65	△ 1-214-166-11	METAL	27K 1% 1/4W	*****			
R66	1-214-164-00	METAL	22K 1% 1/4W				
R67	1-214-149-00	METAL	5.1K 1% 1/4W	CONNECTOR			
R68	1-214-156-00	METAL	10K 1% 1/4W				
R69	1-214-156-00	METAL	10K 1% 1/4W	Z1	*1-561-798-00	SOCKET, MULTI CONNECTOR 15P	
R70	1-214-156-00	METAL	10K 1% 1/4W	Z2	*1-561-798-00	SOCKET, MULTI CONNECTOR 15P	
R71	1-214-156-00	METAL	10K 1% 1/4W	*****			
R72	△ 1-213-155-51	METAL OXIDE	10K 5% 1W F				
R73	△ 1-213-155-51	METAL OXIDE	10K 5% 1W F	*1-605-843-00 F BOARD			

R74	△ 1-213-163-51	METAL OXIDE	47K 5% 1W F				
R75	△ 1-213-163-51	METAL OXIDE	47K 5% 1W F	CAPACITOR			
✕R76	△	METAL	1W				
✕R77	△	METAL	1W	C1	△ 1-108-747-62	MYLAR 0.1MF 20% 300V	
✕R78	△	METAL	1W	C2	△ 1-108-779-62	MYLAR 0.01MF 20% 300V	
R79	1-212-361-00	METAL OXIDE	1.2 5% 1W F	C3	1-161-743-00	CERAMIC 0.0047MF 400V	
R80	△ 1-214-180-11	METAL	100K 1% 1/4W	C4	1-161-743-00	CERAMIC 0.0047MF 400V	
R81	△ 1-214-166-11	METAL	27K 1% 1/4W	C5	1-161-743-00	CERAMIC 0.0047MF 400V	
R82	△ 1-214-149-11	METAL	5.1K 1% 1/4W	C6	1-161-743-00	CERAMIC 0.0047MF 400V	
R83	1-214-156-00	METAL	10K 1% 1/4W	C7	1-161-743-00	CERAMIC 0.0047MF 400V	
				CONNECTOR			
R84	1-213-148-00	METAL OXIDE	2.7K 5% 1W F	F1	*1-508-767-00	5P PLUG	
R85	1-213-148-00	METAL OXIDE	2.7K 5% 1W F	F2	*1-508-846-00	PIN, CONNECTOR 8P	
R86	1-213-131-00	METAL OXIDE	100 5% 1W F	F3	*1-508-766-00	4P PLUG (M)	
R87	1-202-439-17	SOLID	220K 5% 1/4W	F4	*1-508-797-00	PIN, CONNECTOR 4P	
R88	1-214-180-00	METAL	100K 1% 1/4W	F5	*1-508-786-00	2P PLUG (M)	
R89	1-214-180-00	METAL	100K 1% 1/4W	F6	*1-508-796-21	PIN, CONNECTOR 2P	
R90	1-214-139-00	METAL	2K 1% 1/4W	F7	*1-506-347-21	4P PLUG	
R91	1-214-156-00	METAL	10K 1% 1/4W	F8	*1-506-347-21	4P PLUG	
R92	1-214-158-00	METAL	12K 1% 1/4W	F9	*1-506-347-21	4P PLUG	
R93	1-214-126-00	METAL	560 1% 1/4W	F10	*1-506-348-XX	3P PLUG (L)	
R94	1-214-169-00	METAL	36K 1% 1/4W	F11	*1-506-348-XX	3P PLUG (L)	
R95	1-213-125-00	METAL OXIDE	33 5% 1W F	F12	*1-506-348-XX	3P PLUG (L)	
R96	1-213-125-00	METAL OXIDE	33 5% 1W F	F13	*1-506-371-00	2P PLUG (L)	
R100	1-214-148-00	METAL	4.7K 1% 1/4W	F14	*1-506-348-XX	3P PLUG (L)	
R101	1-214-148-00	METAL	4.7K 1% 1/4W	F15	*1-506-348-XX	3P PLUG (L)	
R102	1-247-805-00	CARBON	82 5% 1/8W F	F16	1-506-348-XX	3P PLUG (L)	
VARIABLE RESISTOR				F17	*1-508-765-00	3P PLUG (M)	
RV1	1-224-919-00	RES, ADJ, METAL FILM 5K		F18	*1-508-765-00	3P PLUG (M)	
TRANSFORMER				F19	*1-508-765-00	3P PLUG (M)	
				F20	*1-508-786-00	2P PLUG (M)	
T1	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE		F21	*1-508-765-00	3P PLUG (M)	



Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
F22	*1-508-786-00	2P PLUG (M)		C66	1-161-059-00	CERAMIC 0.047MF	10% 25V
F23	*1-508-786-00	2P PLUG (M)		C67	1-123-356-00	ELECT 10MF	20% 16V
F24	*1-508-796-00	PIN, CONNECTOR 2P		C68	1-102-971-00	CERAMIC 82PF	5% 50V
				C72	1-101-004-00	CERAMIC 0.01MF	50V
				C73	1-123-333-00	ELECT 100MF	20% 16V
		COIL					
L1	Δ 1-421-259-12	COIL, LINE FILTER		C74	1-102-508-00	CERAMIC 10PF	0.5PF 50V
L2	1-459-215-00	COIL (WITH CORE)		C81	1-106-204-00	MYLAR 0.022MF	10% 100V
L3	1-459-215-00	COIL (WITH CORE)		C82	1-102-934-00	CERAMIC 1PF	0.25PF 50V
		THERMISTOR		C83	1-102-851-00	CERAMIC 15PF	5% 50V
				C84	1-101-004-00	CERAMIC 0.01MF	50V
THP1	Δ 1-800-686-32	THERMISTOR (POSITIVE)		C85	1-123-332-00	ELECT 47MF	16V
				C86	1-161-059-00	CERAMIC 0.047MF	10% 25V
				C87	1-161-059-00	CERAMIC 0.047MF	10% 25V
				C88	1-102-503-00	CERAMIC 3PF	0.25PF 50V
				C89	1-123-356-00	ELECT 10MF	20% 16V
	*A-1275-036-A	Q BOARD, COMPLETE		C90	1-101-004-00	CERAMIC 0.01MF	50V
		*****		C91	1-101-004-00	CERAMIC 0.01MF	50V
				C92	1-101-004-00	CERAMIC 0.01MF	50V
				C93	1-123-333-00	ELECT 100MF	20% 16V
				C95	1-102-525-00	CERAMIC 68PF	5% 50V
	*4-335-905-00	PLATE (S), SHIELD		C101	1-106-204-00	MYLAR 0.022MF	10% 100V
				C102	1-102-934-00	CERAMIC 1PF	0.25PF 50V
				C103	1-102-851-00	CERAMIC 15PF	5% 50V
				C104	1-101-004-00	CERAMIC 0.01MF	50V
				C105	1-123-332-00	ELECT 47MF	16V
		CAPACITOR		C106	1-161-059-00	CERAMIC 0.047MF	10% 25V
C1	1-106-204-00	MYLAR 0.022MF	10% 100V	C107	1-161-059-00	CERAMIC 0.047MF	10% 25V
C2	1-102-934-00	CERAMIC 1PF	0.25PF 50V	C108	1-102-503-00	CERAMIC 3PF	0.25PF 50V
C3	1-102-851-00	CERAMIC 15PF	5% 50V	C109	1-123-356-00	ELECT 10MF	20% 16V
C4	1-101-004-00	CERAMIC 0.01MF	50V	C110	1-101-004-00	CERAMIC 0.01MF	50V
C5	1-123-332-00	ELECT 47MF	16V				
				C111	1-101-004-00	CERAMIC 0.01MF	50V
C6	1-161-059-00	CERAMIC 0.047MF	10% 25V	C112	1-101-004-00	CERAMIC 0.01MF	50V
C7	1-123-356-00	ELECT 10MF	20% 16V	C113	1-123-333-00	ELECT 100MF	20% 16V
C8	1-102-865-00	CERAMIC 8PF	0.5PF 50V	C115	1-102-529-00	CERAMIC 100PF	5% 50V
C12	1-101-004-00	CERAMIC 0.01MF	50V	C121	1-106-204-00	MYLAR 0.022MF	10% 100V
C13	1-123-333-00	ELECT 100MF	20% 16V				
				C122	1-102-934-00	CERAMIC 1PF	0.25PF 50V
C21	1-106-204-00	MYLAR 0.022MF	10% 100V	C123	1-102-851-00	CERAMIC 15PF	5% 50V
C22	1-102-934-00	CERAMIC 1PF	0.25PF 50V	C124	1-101-004-00	CERAMIC 0.01MF	50V
C23	1-102-851-00	CERAMIC 15PF	5% 50V	C125	1-123-332-00	ELECT 47MF	16V
C24	1-101-004-00	CERAMIC 0.01MF	50V	C126	1-161-059-00	CERAMIC 0.047MF	10% 25V
C25	1-123-332-00	ELECT 47MF	16V				
				C127	1-161-059-00	CERAMIC 0.047MF	10% 25V
C26	1-161-059-00	CERAMIC 0.047MF	10% 25V	C128	1-102-503-00	CERAMIC 3PF	0.25PF 50V
C27	1-123-356-00	ELECT 10MF	20% 16V	C129	1-123-356-00	ELECT 10MF	20% 16V
C28	1-102-865-00	CERAMIC 8PF	0.5PF 50V	C130	1-101-004-00	CERAMIC 0.01MF	50V
C32	1-101-004-00	CERAMIC 0.01MF	50V	C131	1-101-004-00	CERAMIC 0.01MF	50V
C33	1-123-333-00	ELECT 100MF	20% 16V				
				C132	1-101-004-00	CERAMIC 0.01MF	50V
C41	1-106-204-00	MYLAR 0.022MF	10% 100V	C133	1-123-333-00	ELECT 100MF	20% 16V
C42	1-102-934-00	CERAMIC 1PF	0.25PF 50V	C134	1-101-004-00	CERAMIC 0.01MF	50V
C43	1-102-851-00	CERAMIC 15PF	5% 50V	C135	1-102-529-00	CERAMIC 100PF	5% 50V
C44	1-101-004-00	CERAMIC 0.01MF	50V	C135	1-123-333-00	ELECT 100MF	20% 16V
C45	1-123-332-00	ELECT 47MF	16V				
				C136	1-101-004-00	CERAMIC 0.01MF	50V
C46	1-161-059-00	CERAMIC 0.047MF	10% 25V	C137	1-123-333-00	ELECT 100MF	20% 16V
C47	1-123-356-00	ELECT 10MF	20% 16V	C138	1-101-004-00	CERAMIC 0.01MF	50V
C48	1-102-865-00	CERAMIC 8PF	0.5PF 50V				
C52	1-101-004-00	CERAMIC 0.01MF	50V				
C53	1-123-333-00	ELECT 100MF	20% 16V				
C61	1-106-204-00	MYLAR 0.022MF	10% 100V				
C63	1-102-851-00	CERAMIC 15PF	5% 50V				
C64	1-101-004-00	CERAMIC 0.01MF	50V				
C65	1-123-332-00	ELECT 47MF	16V				

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C139	1-123-333-00	ELECT	100MF 20% 16V	C245	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C140	1-101-004-00	CERAMIC	0.01MF 50V	C246	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C141	1-123-333-00	ELECT	100MF 20% 16V	C247	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C142	1-101-004-00	CERAMIC	0.01MF 50V	C248	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C143	1-123-333-00	ELECT	100MF 20% 16V	C249	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C144	1-101-004-00	CERAMIC	0.01MF 50V	C250	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C145	1-123-333-00	ELECT	100MF 20% 16V	C251	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C146	1-123-356-00	ELECT	10MF 20% 16V	C252	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C147	1-101-004-00	CERAMIC	0.01MF 50V	C253	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C148	1-123-333-00	ELECT	100MF 20% 16V	C254	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C149	1-102-531-00	CERAMIC	150PF 5% 50V	C255	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C150	1-102-531-00	CERAMIC	150PF 5% 50V	C256	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C151	1-102-959-00	CERAMIC	22PF 5% 50V	C257	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C152	1-102-959-00	CERAMIC	22PF 5% 50V	C258	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C153	1-102-959-00	CERAMIC	22PF 5% 50V	C259	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C201	1-123-333-00	ELECT	100MF 20% 16V	C260	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C202	1-123-333-00	ELECT	100MF 20% 16V	C261	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C203	1-123-333-00	ELECT	100MF 20% 16V	C262	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C204	1-123-333-00	ELECT	100MF 20% 16V	C263	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C205	1-123-333-00	ELECT	100MF 20% 16V	C266	1-101-004-00	CERAMIC 0.01MF 50V	
C206	1-123-333-00	ELECT	100MF 20% 16V	C267	1-101-004-00	CERAMIC 0.01MF 50V	
C207	1-123-333-00	ELECT	100MF 20% 16V	C268	1-101-004-00	CERAMIC 0.01MF 50V	
C208	1-123-333-00	ELECT	100MF 20% 16V	C269	1-101-004-00	CERAMIC 0.01MF 50V	
C211	1-123-332-00	ELECT	47MF 20% 16V	C271	1-123-356-00	ELECT 10MF 20% 16V	
C212	1-123-332-00	ELECT	47MF 20% 16V	C272	1-123-356-00	ELECT 10MF 20% 16V	
C213	1-123-332-00	ELECT	47MF 20% 16V	TRIMMER			
C214	1-123-332-00	ELECT	47MF 20% 16V	CV1	1-141-147-XX	CAP, TRIMMER	
C215	1-123-332-00	ELECT	47MF 20% 16V	CV2	1-141-138-XX	CAP, TRIMMER, 5PF-8PF	
C216	1-123-332-00	ELECT	47MF 20% 16V	CV3	1-141-147-XX	CAP, TRIMMER	
C217	1-123-332-00	ELECT	47MF 20% 16V	CV4	1-141-147-XX	CAP, TRIMMER	
C218	1-123-332-00	ELECT	47MF 20% 16V	CV5	1-141-138-XX	CAP, TRIMMER, 5PF-8PF	
C219	1-123-332-00	ELECT	47MF 20% 16V	CV6	1-141-147-XX	CAP, TRIMMER	
C220	1-123-332-00	ELECT	47MF 20% 16V	CV7	1-141-147-XX	CAP, TRIMMER	
C221	1-123-332-00	ELECT	47MF 20% 16V	CV8	1-141-138-XX	CAP, TRIMMER, 5PF-8PF	
C222	1-123-332-00	ELECT	47MF 20% 16V	CV9	1-141-147-XX	CAP, TRIMMER	
C223	1-123-332-00	ELECT	47MF 20% 16V	CV10	1-141-147-XX	CAP, TRIMMER	
C224	1-123-332-00	ELECT	47MF 20% 16V	CV11	1-141-147-XX	CAP, TRIMMER	
C225	1-123-332-00	ELECT	47MF 20% 16V	CV12	1-141-138-XX	CAP, TRIMMER, 5PF-8PF	
C226	1-123-332-00	ELECT	47MF 20% 16V	CV13	1-141-147-XX	CAP, TRIMMER	
C227	1-123-332-00	ELECT	47MF 20% 16V	CV14	1-141-147-XX	CAP, TRIMMER	
C231	1-161-059-00	CERAMIC	0.047MF 10% 25V	CV15	1-141-138-XX	CAP, TRIMMER, 5PF-8PF	
C233	1-161-059-00	CERAMIC	0.047MF 10% 25V	CV16	1-141-147-XX	CAP, TRIMMER	
C234	1-161-059-00	CERAMIC	0.047MF 10% 25V	CV17	1-141-147-XX	CAP, TRIMMER	
C235	1-161-059-00	CERAMIC	0.047MF 10% 25V	CV18	1-141-138-XX	CAP, TRIMMER, 5PF-8PF	
C236	1-161-059-00	CERAMIC	0.047MF 10% 25V	CV19	1-141-147-XX	CAP, TRIMMER	
C237	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC			
C238	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC1	8-751-300-00	IC CX130	
C239	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC2	8-751-300-00	IC CX130	
C240	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC3	8-751-300-00	IC CX130	
C241	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC4	8-751-300-00	IC CX130	
C242	1-161-059-00	CERAMIC	0.047MF 10% 25V	IC5	8-751-300-00	IC CX130	
C243	1-161-059-00	CERAMIC	0.047MF 10% 25V				
C244	1-161-059-00	CERAMIC	0.047MF 10% 25V				

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
IC6	8-751-300-00	IC CX130		Q43	8-765-212-20	TRANSISTOR 2SA925	
IC7	8-759-145-58	IC UPC4558C		Q44	8-765-212-20	TRANSISTOR 2SA925	
IC8	8-759-145-58	IC UPC4558C		Q45	8-765-212-20	TRANSISTOR 2SA925	
IC9	8-759-145-58	IC UPC4558C		Q46	8-765-300-00	TRANSISTOR 2SC2009	
IC10	8-759-901-23	IC SN74LS123N		Q47	8-765-300-00	TRANSISTOR 2SC2009	
CONNECTOR				Q48	8-765-300-00	TRANSISTOR 2SC2009	
Q1	*1-508-796-00	PIN, CONNECTOR 2P		Q49	8-729-105-71	TRANSISTOR 2SK523-K2	
Q2	*1-508-796-00	PIN, CONNECTOR 2P		Q51	8-765-410-00	TRANSISTOR 2SC2213	
Q3	*1-508-796-00	PIN, CONNECTOR 2P		Q52	8-765-410-00	TRANSISTOR 2SC2213	
Q4	*1-508-796-00	PIN, CONNECTOR 2P		Q53	8-765-212-20	TRANSISTOR 2SA925	
Q5	*1-508-796-00	PIN, CONNECTOR 2P		Q54	8-765-212-20	TRANSISTOR 2SA925	
Q6	*1-508-796-00	PIN, CONNECTOR 2P		Q55	8-765-212-20	TRANSISTOR 2SA925	
Q7	*1-508-796-00	PIN, CONNECTOR 2P		Q56	8-765-300-00	TRANSISTOR 2SC2009	
Q8	*1-508-797-00	PIN, CONNECTOR 4P		Q57	8-765-300-00	TRANSISTOR 2SC2009	
Q9	*1-508-796-00	PIN, CONNECTOR 2P		Q58	8-765-300-00	TRANSISTOR 2SC2009	
Q10	*1-508-742-00	PIN, CONNECTOR 3P		Q59	8-729-105-71	TRANSISTOR 2SK523-K2	
Q11	*1-508-796-00	PIN, CONNECTOR 2P		Q61	8-765-410-00	TRANSISTOR 2SC2213	
Q12	*1-508-796-00	PIN, CONNECTOR 2P		Q62	8-765-410-00	TRANSISTOR 2SC2213	
Q13	*1-508-796-00	PIN, CONNECTOR 2P		Q63	8-765-212-20	TRANSISTOR 2SA925	
Q14	*1-508-796-21	PIN, CONNECTOR 2P		Q64	8-765-212-20	TRANSISTOR 2SA925	
Q15	*1-508-797-31	PIN, CONNECTOR 4P		Q65	8-765-212-20	TRANSISTOR 2SA925	
Q16	*1-508-796-00	PIN, CONNECTOR 2P		Q66	8-765-300-00	TRANSISTOR 2SC2009	
Q17	*1-508-796-00	PIN, CONNECTOR 2P		Q67	8-765-300-00	TRANSISTOR 2SC2009	
TRANSISTOR				Q68	8-765-300-00	TRANSISTOR 2SC2009	
Q1	8-765-410-00	TRANSISTOR 2SC2213		Q69	8-729-105-71	TRANSISTOR 2SK523-K2	
Q2	8-765-410-00	TRANSISTOR 2SC2213		Q71	8-765-410-00	TRANSISTOR 2SC2213	
Q3	8-765-212-20	TRANSISTOR 2SA925		Q72	8-765-410-00	TRANSISTOR 2SC2213	
Q4	8-765-212-20	TRANSISTOR 2SA925		Q73	8-729-603-50	TRANSISTOR 2SC403SP	
Q5	8-765-212-20	TRANSISTOR 2SA925		RESISTOR			
Q6	8-765-300-00	TRANSISTOR 2SC2009		R1	1-247-791-00	CARBON	22 5% 1/6W
Q10	8-765-212-20	TRANSISTOR 2SA925		R2	1-247-831-00	CARBON	1K 5% 1/6W
Q11	8-765-410-00	TRANSISTOR 2SC2213		R3	1-247-831-00	CARBON	1K 5% 1/6W
Q12	8-765-410-00	TRANSISTOR 2SC2213		R4	1-214-160-00	METAL	15K 1% 1/4W
Q13	8-765-212-20	TRANSISTOR 2SA925		R5	1-247-850-00	CARBON	6.2K 5% 1/6W
Q14	8-765-212-20	TRANSISTOR 2SA925		R6	1-214-148-00	METAL	4.7K 1% 1/4W
Q15	8-765-212-20	TRANSISTOR 2SA925		R7	1-247-843-00	CARBON	3.3K 5% 1/6W
Q16	8-765-300-00	TRANSISTOR 2SC2009		R8	1-247-860-00	CARBON	16K 5% 1/6W
Q21	8-765-410-00	TRANSISTOR 2SC2213		R9	1-247-814-00	CARBON	200 5% 1/6W
Q22	8-765-410-00	TRANSISTOR 2SC2213		R10	1-247-783-00	CARBON	10 5% 1/6W
Q23	8-765-212-20	TRANSISTOR 2SA925		R11	1-247-783-00	CARBON	10 5% 1/6W
Q24	8-765-212-20	TRANSISTOR 2SA925		R12	1-247-852-00	CARBON	7.5K 5% 1/6W
Q25	8-765-212-20	TRANSISTOR 2SA925		R13	1-247-859-00	CARBON	15K 5% 1/6W
Q26	8-765-300-00	TRANSISTOR 2SC2009		R14	1-247-804-00	CARBON	75 5% 1/6W
Q31	8-765-410-00	TRANSISTOR 2SC2213		R15	1-247-846-00	CARBON	4.3K 5% 1/6W
Q32	8-765-410-00	TRANSISTOR 2SC2213		R16	1-214-141-00	METAL	2.4K 1% 1/4W
Q33	8-765-212-20	TRANSISTOR 2SA925		R17	1-214-132-00	METAL	1K 1% 1/4W
Q34	8-765-212-20	TRANSISTOR 2SA925		R30	1-247-807-00	CARBON	100 5% 1/6W
Q35	8-765-212-20	TRANSISTOR 2SA925		R31	1-247-791-00	CARBON	22 5% 1/6W
Q36	8-765-300-00	TRANSISTOR 2SC2009		R32	1-247-831-00	CARBON	1K 5% 1/6W
Q41	8-765-410-00	TRANSISTOR 2SC2213		R33	1-247-831-00	CARBON	1K 5% 1/6W
Q42	8-765-410-00	TRANSISTOR 2SC2213		R34	1-214-160-00	METAL	15K 1% 1/4W
				R35	1-247-850-00	CARBON	6.2K 5% 1/6W

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R36	1-214-148-00	METAL	4.7K 1% 1/4W	R125	1-247-850-00	CARBON	6.2K 5% 1/6W
R37	1-247-843-00	CARBON	3.3K 5% 1/6W	R126	1-214-148-00	METAL	4.7K 1% 1/4W
R38	1-247-860-00	CARBON	16K 5% 1/6W	R127	1-247-843-00	CARBON	3.3K 5% 1/6W
R39	1-247-814-00	CARBON	200 5% 1/6W	R128	1-247-860-00	CARBON	16K 5% 1/6W
R40	1-247-783-00	CARBON	10 5% 1/6W	R129	1-247-814-00	CARBON	200 5% 1/6W
R41	1-247-783-00	CARBON	10 5% 1/6W	R130	1-247-783-00	CARBON	10 5% 1/6W
R42	1-247-852-00	CARBON	7.5K 5% 1/6W	R131	1-247-783-00	CARBON	10 5% 1/6W
R43	1-247-859-00	CARBON	15K 5% 1/6W	R132	1-247-852-00	CARBON	7.5K 5% 1/6W
R44	1-247-804-00	CARBON	75 5% 1/6W	R133	1-247-859-00	CARBON	15K 5% 1/6W
R45	1-247-846-00	CARBON	4.3K 5% 1/6W	R134	1-247-804-00	CARBON	75 5% 1/6W
R46	1-214-140-00	METAL	2.2K 1% 1/4W	R135	1-247-846-00	CARBON	4.3K 5% 1/6W
R47	1-214-100-00	METAL	47 1% 1/4W	R136	1-214-140-00	METAL	2.2K 1% 1/4W
R48	1-214-130-00	METAL	820 1% 1/4W	R137	1-214-100-00	METAL	47 1% 1/4W
R60	1-247-807-00	CARBON	100 5% 1/6W	R138	1-214-130-00	METAL	820 1% 1/4W
R61	1-247-791-00	CARBON	22 5% 1/6W	R139	1-247-807-00	CARBON	100 5% 1/6W
R62	1-247-831-00	CARBON	1K 5% 1/6W	R140	1-249-429-11	CARBON	10K 5% 1/6W
R63	1-247-831-00	CARBON	1K 5% 1/6W	R141	1-249-429-11	CARBON	10K 5% 1/6W
R64	1-214-160-00	METAL	15K 1% 1/4W	R142	1-247-828-00	CARBON	750 5% 1/6W
R65	1-247-850-00	CARBON	6.2K 5% 1/6W	R143	1-249-429-11	CARBON	10K 5% 1/6W
R66	1-214-148-00	METAL	4.7K 1% 1/4W	R144	1-202-473-00	SOLID	5.6M 5% 1/4W
R67	1-247-843-00	CARBON	3.3K 5% 1/6W	R145	1-249-429-11	CARBON	10K 5% 1/6W
R68	1-247-860-00	CARBON	16K 5% 1/6W	R146	1-247-831-00	CARBON	1K 5% 1/6W
R69	1-247-814-00	CARBON	200 5% 1/6W	R147	1-249-425-11	CARBON	4.7K 5% 1/6W
R70	1-247-783-00	CARBON	10 5% 1/6W	R148	1-247-840-00	CARBON	2.4K 5% 1/6W
R71	1-247-783-00	CARBON	10 5% 1/6W	R149	1-249-425-11	CARBON	4.7K 5% 1/6W
R72	1-247-852-00	CARBON	7.5K 5% 1/6W	R150	1-247-807-00	CARBON	100 5% 1/6W
R73	1-247-859-00	CARBON	15K 5% 1/6W	R151	1-247-791-00	CARBON	22 5% 1/6W
R74	1-247-804-00	CARBON	75 5% 1/6W	R152	1-247-831-00	CARBON	1K 5% 1/6W
R75	1-247-846-00	CARBON	4.3K 5% 1/6W	R153	1-247-831-00	CARBON	1K 5% 1/6W
R76	1-214-140-00	METAL	2.2K 1% 1/4W	R154	1-214-160-00	METAL	15K 1% 1/4W
R77	1-214-100-00	METAL	47 1% 1/4W	R155	1-247-850-00	CARBON	6.2K 5% 1/6W
R78	1-214-130-00	METAL	820 1% 1/4W	R156	1-214-148-00	METAL	4.7K 1% 1/4W
R90	1-247-807-00	CARBON	100 5% 1/6W	R157	1-247-843-00	CARBON	3.3K 5% 1/6W
R91	1-247-791-00	CARBON	22 5% 1/6W	R158	1-247-860-00	CARBON	16K 5% 1/6W
R92	1-247-831-00	CARBON	1K 5% 1/6W	R159	1-247-814-00	CARBON	200 5% 1/6W
R93	1-247-831-00	CARBON	1K 5% 1/6W	R160	1-247-783-00	CARBON	10 5% 1/6W
R94	1-214-180-00	METAL	100K 1% 1/4W	R161	1-247-783-00	CARBON	10 5% 1/6W
R95	1-247-850-00	CARBON	6.2K 5% 1/6W	R162	1-247-852-00	CARBON	7.5K 5% 1/6W
R96	1-214-148-00	METAL	4.7K 1% 1/4W	R163	1-247-859-00	CARBON	15K 5% 1/6W
R97	1-247-843-00	CARBON	3.3K 5% 1/6W	R164	1-247-804-00	CARBON	75 5% 1/6W
R98	1-247-860-00	CARBON	16K 5% 1/6W	R165	1-247-846-00	CARBON	4.3K 5% 1/6W
R99	1-247-814-00	CARBON	200 5% 1/6W	R166	1-214-140-00	METAL	2.2K 1% 1/4W
R102	1-247-852-00	CARBON	7.5K 5% 1/6W	R167	1-214-100-00	METAL	47 1% 1/4W
R103	1-247-859-00	CARBON	15K 5% 1/6W	R168	1-214-130-00	METAL	820 1% 1/4W
R104	1-247-807-00	CARBON	100 5% 1/6W	R169	1-247-807-00	CARBON	100 5% 1/6W
R105	1-247-846-00	CARBON	4.3K 5% 1/6W	R170	1-249-429-11	CARBON	10K 5% 1/6W
R106	1-214-140-00	METAL	2.2K 1% 1/4W	R171	1-249-429-11	CARBON	10K 5% 1/6W
R107	1-214-132-00	METAL	1K 1% 1/4W	R172	1-247-828-00	CARBON	750 5% 1/6W
R120	1-247-807-00	CARBON	100 5% 1/6W	R173	1-249-429-11	CARBON	10K 5% 1/6W
R121	1-247-791-00	CARBON	22 5% 1/6W	R174	1-202-473-00	SOLID	5.6M 5% 1/4W
R122	1-247-831-00	CARBON	1K 5% 1/6W	R175	1-249-429-11	CARBON	10K 5% 1/6W
R123	1-247-831-00	CARBON	1K 5% 1/6W	R176	1-247-831-00	CARBON	1K 5% 1/6W
R124	1-214-160-00	METAL	15K 1% 1/4W	R177	1-249-425-11	CARBON	4.7K 5% 1/6W

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R16	1-249-429-11	CARBON 10K 5% 1/6W		C26	1-123-323-00	ELECT 470MF 20% 16V	
R17	1-249-429-11	CARBON 10K 5% 1/6W		C27	1-101-003-00	CERAMIC 0.0047MF 50V	
R18	1-249-429-11	CARBON 10K 5% 1/6W		C28	1-101-003-00	CERAMIC 0.0047MF 50V	
R19	1-249-425-11	CARBON 4.7K 5% 1/6W		C29	1-101-003-00	CERAMIC 0.0047MF 50V	
R20	1-249-425-11	CARBON 4.7K 5% 1/6W		C30	1-101-003-00	CERAMIC 0.0047MF 50V	
R21	1-249-425-11	CARBON 4.7K 5% 1/6W		C31	1-125-281-00	ELECT(BLOCK) 6800MF 20% 35V	
R22	1-214-173-00	METAL 51K 1% 1/4W		C32	1-102-973-00	CERAMIC 100PF 5% 50V	
R23	1-214-168-00	METAL 33K 1% 1/4W		C33	1-102-976-00	CERAMIC 180PF 5% 50V	
R24	1-214-180-00	METAL 100K 1% 1/4W		C34	1-123-330-00	ELECT 22MF 20% 25V	
R25	1-214-148-00	METAL 4.7K 1% 1/4W		C35	1-123-336-00	ELECT 470MF 20% 25V	
R26	1-214-148-00	METAL 4.7K 1% 1/4W		C36	1-101-003-00	CERAMIC 0.0047MF 50V	
R27	1-214-159-00	METAL 13K 1% 1/4W		C37	1-101-003-00	CERAMIC 0.0047MF 50V	
R28	1-247-848-00	CARBON 5.1K 5% 1/6W		C38	1-101-003-00	CERAMIC 0.0047MF 50V	
R29	1-247-848-00	CARBON 5.1K 5% 1/6W		C39	1-101-003-00	CERAMIC 0.0047MF 50V	
R30	1-249-429-11	CARBON 10K 5% 1/6W		C40	1-125-281-00	ELECT(BLOCK) 6800MF 20% 35V	
CONNECTOR				C41	1-102-973-00	CERAMIC 100PF 5% 50V	
R1	*1-508-846-00	PIN, CONNECTOR 8P		C42	1-102-976-00	CERAMIC 180PF 5% 50V	
R2	*1-508-845-00	PIN, CONNECTOR 6P		C43	1-123-351-51	ELECT 0.47MF 20% 50V	
R3	*1-508-797-00	PIN, CONNECTOR 4P		C44	1-123-330-00	ELECT 22MF 20% 25V	
R4	*1-508-796-00	PIN, CONNECTOR 2P		C45	1-123-336-00	ELECT 470MF 20% 25V	
R5	*1-508-797-00	PIN, CONNECTOR 4P		C46	1-102-038-00	CERAMIC 0.001MF 500V	
*****				C47	1-102-038-00	CERAMIC 0.001MF 500V	
*A-1316-017-A G BOARD, COMPLETE				C48	1-125-198-00	ELECT(BLOCK) 4700MF 50V	
*****				C49	1-123-380-00	ELECT 1MF 20% 50V	
1-533-087-00 HOLDER, FUSE				C50	1-123-356-00	ELECT 10MF 20% 25V	
CAPACITOR				C51	1-123-380-00	ELECT 1MF 20% 50V	
C1	1-102-038-00	CERAMIC 0.001MF 500V		C52	1-123-336-00	ELECT 470MF 20% 25V	
C2	1-102-038-00	CERAMIC 0.001MF 500V		C53	1-123-380-00	ELECT 1MF 20% 50V	
C3	1-125-197-00	ELECT(BLOCK) 820MF 160V		C54	1-123-356-00	ELECT 10MF 20% 25V	
C4	1-125-197-00	ELECT(BLOCK) 820MF 160V		C55	1-123-380-00	ELECT 1MF 20% 50V	
C5	1-108-433-00	MYLAR 0.1MF 10% 200V		C56	1-123-336-00	ELECT 470MF 20% 25V	
C6	1-123-369-00	ELECT 4.7MF 20% 25V		C57	1-102-038-00	CERAMIC 0.001MF 500V	
C7	1-101-004-00	CERAMIC 0.01MF 50V		C58	1-102-038-00	CERAMIC 0.001MF 500V	
C8	1-123-356-00	ELECT 10MF 20% 25V		C59	1-125-198-00	ELECT(BLOCK) 4700MF 50V	
C9	1-121-257-00	ELECT 4.7MF 16V		C60	1-123-380-00	ELECT 1MF 20% 50V	
C10	1-101-004-00	CERAMIC 0.01MF 50V		C61	1-123-356-00	ELECT 10MF 20% 25V	
C11	1-123-253-00	ELECT 22MF 160V		C62	1-123-380-00	ELECT 1MF 20% 50V	
C12	1-102-038-00	CERAMIC 0.001MF 500V		C63	1-123-336-00	ELECT 470MF 20% 25V	
C13	1-102-038-00	CERAMIC 0.001MF 500V		C64	1-123-380-00	ELECT 1MF 20% 50V	
C14	1-102-038-00	CERAMIC 0.001MF 500V		C65	1-123-356-00	ELECT 10MF 20% 25V	
C15	1-102-038-00	CERAMIC 0.001MF 500V		C66	1-123-380-00	ELECT 1MF 20% 50V	
C16	1-125-278-00	ELECT(BLOCK) 220MF 250V		C67	1-123-336-00	ELECT 470MF 20% 25V	
C17	1-123-008-00	ELECT 10MF 350V		C68	1-101-003-00	CERAMIC 0.0047MF 50V	
C19	1-101-003-00	CERAMIC 0.0047MF 50V		C69	1-101-003-00	CERAMIC 0.0047MF 50V	
C20	1-101-003-00	CERAMIC 0.0047MF 50V		C70	1-101-003-00	CERAMIC 0.0047MF 50V	
C21	1-101-003-00	CERAMIC 0.0047MF 50V		C71	1-101-003-00	CERAMIC 0.0047MF 50V	
C22	1-101-003-00	CERAMIC 0.0047MF 50V		C72	1-125-193-00	ELECT(BLOCK) 4700MF 35V	
C23	1-125-193-00	ELECT(BLOCK) 4700MF 35V		C73	1-123-333-00	ELECT 100MF 20% 16V	
C24	1-123-380-00	ELECT 1MF 20% 50V		C74	1-101-004-00	CERAMIC 0.01MF 50V	
C25	1-123-380-00	ELECT 1MF 20% 50V		C75	1-123-333-00	ELECT 100MF 20% 16V	
C76	1-102-038-00	CERAMIC 0.001MF 500V					
C77	1-102-038-00	CERAMIC 0.001MF 500V					
C78	1-102-038-00	CERAMIC 0.001MF 500V					

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C79	1-102-038-00	CERAMIC 0.001MF	500V	D42	8-719-200-02	DIODE 10E2	
C80	1-102-038-00	CERAMIC 0.001MF	500V	D43	8-719-200-02	DIODE 10E2	
C81	1-102-038-00	CERAMIC 0.001MF	500V	D44	8-719-200-02	DIODE 10E2	
DIODE				D45	8-719-200-02	DIODE 10E2	
D1	8-719-911-55	DIODE U05G		D46	8-719-500-34	DIODE S3VC40	
D2	8-719-911-55	DIODE U05G		D47	8-719-501-34	DIODE S3VC40R	
D3	8-719-911-55	DIODE U05G		D48	8-719-100-46	DIODE RD7.5E-B3	
D4	8-719-911-55	DIODE U05G		D49	8-719-100-44	DIODE RD7.5E-B2	
D5	△ 8-759-157-41	IC UPC574J-G		FUSE			
D6	8-719-301-01	DIODE SEL101S		F1	△ 1-532-578-11	FUSE, GLASS TUBE 2A/125V	
D7	8-759-157-40	IC UPC574J		F2	△ 1-532-536-11	FUSE, GLASS-TUBE 1A/125V	
D8	△ 8-759-157-41	IC UPC574J-G		F3	△ 1-532-555-11	FUSE, GLASS TUBE 1.6A/125V	
D9	△ 8-759-157-41	IC UPC574J-G		CONNECTOR			
D10	△ 8-759-157-41	IC UPC574J-G		G1	1-508-765-00	3P PLUG (M)	
D11	△ 8-759-157-41	IC UPC574J-G		G2	*1-508-786-00	2P PLUG (M)	
D12	△ 8-759-157-41	IC UPC574J-G		G3	*1-508-786-00	2P PLUG (M)	
D14	8-719-911-55	DIODE U05G		G4	*1-508-796-00	PIN, CONNECTOR 2P	
D15	8-719-911-55	DIODE U05G		G5	*1-508-846-00	PIN, CONNECTOR 8P	
D16	8-719-911-55	DIODE U05G		G6	*1-508-797-00	PIN, CONNECTOR 4P	
D17	8-719-911-55	DIODE U05G		G7	*1-508-796-21	PIN, CONNECTOR 2P	
D18	8-719-301-01	DIODE SEL101S		G8	*1-508-742-00	PIN, CONNECTOR 3P	
D19	8-759-157-40	IC UPC574J		G9	*1-508-742-00	PIN, CONNECTOR 3P	
D20	8-719-500-34	DIODE S3VC40		G10	*1-508-742-00	PIN, CONNECTOR 3P	
D21	8-719-501-34	DIODE S3VC40R		G11	*1-508-742-00	PIN, CONNECTOR 3P	
D22	8-719-550-02	DIODE S5KC20		G12	*1-508-797-00	PIN, CONNECTOR 4P	
	2-832-005-00	BUSHING, (G-2), INSULATOR; D22		G13	*1-508-743-00	PIN, CONNECTOR 5P	
	3-618-225-00	NUT, PLATE; D22		G14	*1-508-845-00	PIN, CONNECTOR 6P	
	*4-026-251-00	SPACER, INSULATING; D22		G15	*1-508-797-00	PIN, CONNECTOR 4P	
D23	8-719-551-02	DIODE S5KC20R		G16	*1-508-797-00	PIN, CONNECTOR 4P	
	2-832-005-00	BUSHING, (G-2), INSULATOR; D23		G17	*1-508-797-00	PIN, CONNECTOR 4P	
	3-618-225-00	NUT, PLATE; D23		G18	*1-508-797-00	PIN, CONNECTOR 4P	
	*4-026-251-00	SPACER, INSULATING; D23		G19	*1-508-796-00	PIN, CONNECTOR 2P	
D26	8-719-200-02	DIODE 10E2		IC			
D27	8-719-815-55	DIODE 1S1555		IC1	8-759-171-05	IC UPC7805H	
D28	8-719-550-02	DIODE S5KC20			2-832-005-00	BUSHING, (G-2), INSULATOR; IC1	
	2-832-005-00	BUSHING, (G-2), INSULATOR; D28			3-618-225-00	NUT, PLATE; IC1	
	3-618-225-00	NUT, PLATE; D28			*4-026-251-00	SPACER, INSULATING; IC1	
	*4-026-251-00	SPACER, INSULATING; D28		IC2	8-759-377-23	IC HA17723G	
D29	8-719-551-02	DIODE S5KC20R		IC3	8-759-377-23	IC HA17723G	
	2-832-005-00	BUSHING, (G-2), INSULATOR; D29		IC4	8-759-003-17	IC LM317T	
	3-618-225-00	NUT, PLATE; D29			2-832-005-00	BUSHING, (G-2), INSULATOR; IC4	
	*4-026-251-00	SPACER, INSULATING; D29			3-618-225-00	NUT, PLATE; IC4	
O32	8-719-200-02	DIODE 10E2			*4-026-251-00	SPACER, INSULATING; IC4	
O33	8-719-815-55	DIODE 1S1555		IC5	8-759-003-17	IC LM317T	
O34	8-719-500-34	DIODE S3VC40			2-832-005-00	BUSHING, (G-2), INSULATOR; IC5	
O35	8-719-501-34	DIODE S3VC40R			3-618-225-00	NUT, PLATE; IC5	
O36	8-719-200-02	DIODE 10E2			*4-026-251-00	SPACER, INSULATING; IC5	
O37	8-719-200-02	DIODE 10E2		IC6	8-759-903-37	IC LM337T	
O38	8-719-200-02	DIODE 10E2			2-832-005-00	BUSHING, (G-2), INSULATOR; IC6	
O39	8-719-200-02	DIODE 10E2			3-618-225-00	NUT, PLATE; IC6	
O40	8-719-500-34	DIODE S3VC40					
O41	8-719-501-34	DIODE S3VC40R					

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
IC7	*4-026-251-00	SPACER, INSULATING; IC6		R31	1-214-475-00	METAL OXIDE 68K 2W	F
	8-759-903-37	IC LM337T		R32	1-212-689-00	METAL 30K 1% 1/2W	
	2-832-005-00	BUSHING, (G-2), INSULATOR; IC7		R33	1-212-690-00	METAL 33K 1% 1/2W	
	3-618-225-00	NUT, PLATE; IC7		R34	1-212-682-00	METAL 15K 1% 1/2W	
	*4-026-251-00	SPACER, INSULATING; IC7		R37	1-214-148-00	METAL 4.7K 1% 1/4W	
TRANSISTOR				R38	1-214-132-00	METAL 1K 1% 1/4W	
Q1	△ 8-719-003-08	THYRISTOR CR3CM-8		R39	1-214-160-00	METAL 15K 1% 1/4W	
Q2	8-725-412-00	TRANSISTOR 2SC1124		R40	1-214-136-00	METAL 1.5K 1% 1/4W	
Q3	8-729-122-12	TRANSISTOR 2SA1221		R41	1-214-154-00	METAL 8.2K 1% 1/4W	
Q4	8-729-122-12	TRANSISTOR 2SA1221		R42	1-214-125-00	METAL 510 1% 1/4W	
Q5	8-729-122-12	TRANSISTOR 2SA1221		R43	1-217-192-00	WIREWOUND 0.22 10% 2W	F
Q6	△ 8-719-003-08	THYRISTOR CR3CM-8		R44	1-214-140-00	METAL 2.2K 1% 1/4W	
Q7	8-729-168-82	TRANSISTOR 2SC2688		R45	1-214-145-00	METAL 3.6K 1% 1/4W	
Q8	8-729-115-64	TRANSISTOR 2SA1156		R47	1-214-148-00	METAL 4.7K 1% 1/4W	
Q9	8-729-115-64	TRANSISTOR 2SA1156		R48	1-214-132-00	METAL 1K 1% 1/4W	
Q11	8-729-122-12	TRANSISTOR 2SA1221		R49	1-214-154-00	METAL 8.2K 1% 1/4W	
Q12	8-729-122-12	TRANSISTOR 2SA1221		R50	1-214-125-00	METAL 510 1% 1/4W	
Q13	8-719-003-08	THYRISTOR CR3CM-8		R51	△ 1-214-162-11	METAL 18K 1% 1/4W	
Q14	8-729-600-27	TRANSISTOR 2SC634SP		R52	△ 1-214-162-11	METAL 18K 1% 1/4W	
Q15	8-729-313-42	TRANSISTOR 2SD1134		R53	△ 1-214-143-11	METAL 3K 1% 1/4W	
	*4-335-911-00	HEAT SINK (G); Q15		R54	1-214-160-00	METAL 15K 1% 1/4W	
RESISTOR				R55	△ 1-214-148-11	METAL 4.7K 1% 1/4W	
R1	△ 1-214-168-11	METAL 33K 1% 1/4W		R56	△ 1-214-148-11	METAL 4.7K 1% 1/4W	
R2	△ 1-214-168-11	METAL 33K 1% 1/4W		R57	1-217-194-00	WIREWOUND 0.33 10% 2W	F
R3	△ 1-214-160-11	METAL 15K 1% 1/4W		R58	1-214-117-00	METAL 240 1% 1/4W	
R4	1-214-148-00	METAL 4.7K 1% 1/4W		R59	1-214-142-00	METAL 2.7K 1% 1/4W	
R5	1-202-844-00	SOLID 330K 1/2W		R60	△ 1-214-117-11	METAL 240 1% 1/4W	
R6	1-213-163-00	METAL OXIDE 47K 5% 1W	F	R61	△ 1-214-142-11	METAL 2.7K 1% 1/4W	
R7	1-213-161-00	METAL OXIDE 33K 5% 1W	F	R62	1-214-110-00	METAL 120 1% 1/4W	
R8	1-214-136-00	METAL 1.5K 1% 1/4W		R63	1-214-135-00	METAL 1.3K 1% 1/4W	
R9	1-214-170-00	METAL 39K 1% 1/4W		R64	1-214-110-00	METAL 120 1% 1/4W	
R10	1-214-132-00	METAL 1K 1% 1/4W		R65	1-214-135-00	METAL 1.3K 1% 1/4W	
R11	1-214-142-00	METAL 2.7K 1% 1/4W		R66	1-214-111-00	METAL 130 1% 1/4W	
R12	1-214-151-00	METAL 6.2K 1% 1/4W		R67	1-214-146-00	METAL 3.9K 1% 1/4W	
R13	1-214-149-00	METAL 5.1K 1% 1/4W		R68	1-214-111-00	METAL 130 1% 1/4W	
R14	1-214-167-00	METAL 30K 1% 1/4W		R69	1-202-844-00	SOLID 330K 1/2W	
R15	△ 1-214-162-11	METAL 18K 1% 1/4W		R70	1-214-596-00	METAL OXIDE 39K 5% 2W	F
				R71	1-214-596-00	METAL OXIDE 39K 5% 2W	F
R16	△ 1-214-162-11	METAL 18K 1% 1/4W		VARIABLE RESISTOR			
R17	△ 1-214-160-11	METAL 15K 1% 1/4W		RV1	△ 1-228-293-11	RES, ADJ, CERMET 5K	
R18	1-207-673-00	WIREWOUND 3.3 10% 5W	F	RV2	1-224-939-00	RES, ADJ, CERMET 5K	
R19	△ 1-214-153-11	METAL 7.5K 1% 1/4W		RV3	1-224-936-00	RES, ADJ, CERMET 500	
R20	△ 1-214-153-11	METAL 7.5K 1% 1/4W		RV4	1-224-937-00	RES, ADJ, CERMET 1K	
R21	△ 1-214-142-11	METAL 2.7K 1% 1/4W		RV5	△ 1-228-291-11	RES, ADJ, CERMET 1K	
R22	1-202-641-00	SOLID 680K 5% 1/2W		RV6	1-224-936-00	RES, ADJ, CERMET 500	
R23	1-214-475-00	METAL OXIDE 68K 2W	F	RV7	1-224-936-00	RES, ADJ, CERMET 500	
R24	1-202-621-00	SOLID 100K 10% 1/2W		*****			
R25	1-214-136-00	METAL 1.5K 1% 1/4W					
R26	1-214-142-00	METAL 2.7K 1% 1/4W					
R27	1-212-677-00	METAL 9.1K 1% 1/2W					
R28	1-212-677-00	METAL 9.1K 1% 1/2W					
R29	1-212-677-00	METAL 9.1K 1% 1/2W					
R30	1-212-677-00	METAL 9.1K 1% 1/2W					

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
D19	8-719-901-19	DIODE V11N		Q10	8-729-309-08	TRANSISTOR 2SC1890A	
D20	8-719-815-55	DIODE 1S1555		Q11	8-729-309-08	TRANSISTOR 2SC1890A	
D21	8-719-815-55	DIODE 1S1555		Q12	8-729-313-82	TRANSISTOR 2SD1138	
D22	8-719-815-55	DIODE 1S1555			2-832-005-00	BUSHING, (G-2), INSULATOR; Q12	
D23	8-719-815-55	DIODE 1S1555			3-618-225-00	NUT, PLATE; Q12	
D24	8-719-815-55	DIODE 1S1555			*4-026-251-00	SPACER, INSULATING; Q12	
D25	8-719-815-55	DIODE 1S1555		Q13	8-765-012-20	TRANSISTOR 2SC1811	
D26	8-719-815-55	DIODE 1S1555		Q14	8-729-372-51	TRANSISTOR 2SD725	
D27	8-719-815-55	DIODE 1S1555			3-701-353-00	SPACER, MICA; Q14	
D28	8-719-300-76	DIODE RH1A			*4-314-938-01	RETAINER (TO-3), TRANSISTOR; Q14	
D29	8-719-815-55	DIODE 1S1555		Q15	8-726-420-00	THYRISTOR SG-264A	
D31	8-719-928-08	DIODE ERD28-08S			4-303-844-00	SPACER, MICA (4) MD-17; Q15	
<u>CONNECTOR</u>					*4-309-762-00	RETAINER (MD-17), TRANSISTOR; Q15	
E1	*1-508-766-00	4P PLUG (M)		Q16	8-729-313-42	TRANSISTOR 2SD1134	
E2	*1-508-797-00	PIN, CONNECTOR 4P		Q17	8-729-385-82	TRANSISTOR 2SB858	
E3	*1-508-742-00	PIN, CONNECTOR 3P		Q18	8-729-217-33	TRANSISTOR 2SC1173	
E4	*1-508-845-00	PIN, CONNECTOR 6P			2-832-005-00	BUSHING, (G-2), INSULATOR; Q18	
E5	*1-508-797-31	PIN, CONNECTOR 4P			3-618-225-00	NUT, PLATE; Q18	
E6	*1-508-743-00	PIN, CONNECTOR 5P		Q19	*4-026-251-00	SPACER, INSULATING; Q18	
E7	1-508-765-00	3P PLUG (M)			8-729-247-33	TRANSISTOR 2SA473	
E8	*1-508-846-00	PIN, CONNECTOR 8P			2-832-005-00	BUSHING, (G-2), INSULATOR; Q19	
E9	*1-508-845-00	PIN, CONNECTOR 6P			3-618-225-00	NUT, PLATE; Q19	
E10	*1-508-767-00	5P PLUG		Q20	*4-026-251-00	SPACER, INSULATING; Q19	
E11	*1-508-767-00	5P PLUG		Q21	8-729-600-27	TRANSISTOR 2SC634SP	
<u>IC</u>				Q22	8-729-697-92	TRANSISTOR 2SA979	
IC1	8-759-145-58	IC UPC4558C		Q23	8-763-623-00	TRANSISTOR 2SC1810	
IC2	8-759-145-58	IC UPC4558C		Q24	8-763-623-00	TRANSISTOR 2SC1810	
IC3	8-759-145-58	IC UPC4558C		Q25	8-763-623-00	TRANSISTOR 2SC1810	
<u>COIL</u>				Q26	8-729-600-27	TRANSISTOR 2SC634SP	
L1	1-407-365-00	COIL, CHOKE		<u>RESISTOR</u>			
L2	1-421-503-00	COIL, FERRITE (HPC)		R1	1-214-153-00	METAL	7.5K 1% 1/4W
L3	1-459-111-00	COIL, DRAM CORE (CDI)		R2	1-214-163-00	METAL	20K 1% 1/4W
L4	1-459-111-00	COIL, DRAM CORE (CDI)		R3	1-214-132-00	METAL	1K 1% 1/4W
<u>TRANSISTOR</u>				R4	1-214-156-00	METAL	10K 1% 1/4W
Q1	8-729-173-37	TRANSISTOR 2SA733-P		R5	1-214-156-00	METAL	10K 1% 1/4W
Q2	8-729-697-92	TRANSISTOR 2SA979		R6	1-214-140-00	METAL	2.2K 1% 1/4W
Q3	8-729-173-37	TRANSISTOR 2SA733-P		R7	1-214-148-00	METAL	4.7K 1% 1/4W
Q4	8-765-012-20	TRANSISTOR 2SC1811		R8	1-214-141-00	METAL	2.4K 1% 1/4W
Q5	8-729-309-08	TRANSISTOR 2SC1890A		R9	1-214-145-00	METAL	3.6K 1% 1/4W
Q6	8-729-309-36	TRANSISTOR 2SA893A		R10	1-214-173-00	METAL	51K 1% 1/4W
Q7	8-729-313-42	TRANSISTOR 2SD1134		R11	1-214-144-00	METAL	3.3K 1% 1/4W
	2-832-005-00	BUSHING, (G-2), INSULATOR; Q7		R12	1-206-694-00	METAL OXIDE	18K 5% 2W F
	3-618-225-00	NUT, PLATE; Q7		R13	1-214-098-00	METAL	39 1% 1/4W
	*4-026-251-00	SPACER, INSULATING; Q7		R14	1-214-120-00	METAL	330 1% 1/4W
Q8	8-729-385-82	TRANSISTOR 2SB858		R15	1-212-361-00	METAL OXIDE	1.2 5% 1W F
	2-832-005-00	BUSHING, (G-2), INSULATOR; Q8		R16	1-212-361-00	METAL OXIDE	1.2 5% 1W F
	3-618-225-00	NUT, PLATE; Q8		R17	1-247-807-00	CARBON	100 5% 1/8W F
	*4-026-251-00	SPACER, INSULATING; Q8		R18	1-212-376-00	METAL OXIDE	22 5% 1W F
Q9	8-719-000-28	THYRISTOR CRO2AM-8		R19	1-213-136-00	METAL OXIDE	270 5% 1W F
				R20	1-212-362-00	METAL OXIDE	1.5 5% 1W F
				R21	1-213-155-00	METAL OXIDE	10K 5% 1W F

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R22	1-214-140-00	METAL	2.2K 1% 1/4W	R75	1-214-173-00	METAL	51K 1% 1/4W
R23	1-214-155-00	METAL	9.1K 1% 1/4W	R76	1-214-173-00	METAL	51K 1% 1/4W
R24	1-247-725-11	CARBON	10K 5% 1/4W	R77	1-214-173-00	METAL	51K 1% 1/4W
R25	1-247-725-11	CARBON	10K 5% 1/4W	R78	1-214-178-00	METAL	82K 1% 1/4W
R26	1-213-159-00	METAL OXIDE	22K 5% 1W F	R79	1-214-158-00	METAL	12K 1% 1/4W
R27	1-212-374-00	METAL OXIDE	15 5% 1W F	R80	1-214-173-00	METAL	51K 1% 1/4W
R28	1-246-991-00	CARBON	150 5% 1/8W F	R81	1-214-146-00	METAL	3.9K 1% 1/4W
R29	1-206-733-00	METAL OXIDE	2.2K 5% 3W F	R82	1-246-545-00	CARBON	1M 5% 1/4W
R30	1-247-713-11	CARBON	1K 5% 1/4W	R83	1-214-156-00	METAL	10K 1% 1/4W
R31	1-212-366-00	METAL OXIDE	3.3 5% 1W F	R84	1-214-156-00	METAL	10K 1% 1/4W
R32	1-247-694-11	CARBON	33 5% 1/4W	R85	1-214-108-00	METAL	100 1% 1/4W
R33	1-206-731-00	METAL OXIDE	1.8K 5% 3W F	R86	1-214-151-00	METAL	6.2K 1% 1/4W
R34	1-210-859-00	CARBON	1.2 5% 1/8W F	R87	1-214-158-00	METAL	12K 1% 1/4W
R35	1-249-451-11	CARBON	2.2 5% 1/4W	R88	1-202-645-00	SOLID	1M 5% 1/2W
R36	1-214-156-00	METAL	10K 1% 1/4W	R90	1-247-831-00	CARBON	1K 5% 1/8W F
R37	1-214-156-00	METAL	10K 1% 1/4W	R91	1-206-656-00	METAL OXIDE	470 5% 2W F
R38	1-214-173-00	METAL	51K 1% 1/4W	R92	1-212-376-00	METAL OXIDE	22 5% 1W F
R39	1-247-135-00	CARBON	1.5K 5% 1/4W	R93	1-212-376-00	METAL OXIDE	22 5% 1W F
R40	1-247-135-00	CARBON	1.5K 5% 1/4W	R94	1-247-713-11	CARBON	1K 5% 1/4W
R41	1-210-859-00	CARBON	1.2 5% 1/8W F	<div style="text-align: center;">TRANSFORMER</div> T1 1-421-504-00 TRANSFORMER, FERRITE (VPT) T2 1-437-071-00 TRANSFORMER, HORIZONTAL DRIVE T3 1-439-285-00 TRANSFORMER, FERRITE (HOT) T4 1-421-502-00 TRANSFORMER, FERRITE (HLC) T5 1-407-849-00 TRANSFORMER, D.F ***** *A-1345-332-A DA BOARD, COMPLETE *****			
R42	1-210-859-00	CARBON	1.2 5% 1/8W F				
R43	1-247-126-00	CARBON	620 5% 1/4W				
R44	1-247-126-00	CARBON	620 5% 1/4W				
R45	1-206-640-00	METAL OXIDE	100 5% 2W F				
R46	1-212-361-00	METAL OXIDE	1.2 5% 1W F	<div style="text-align: center;">CAPACITOR</div> C1 1-123-318-00 ELECT 33MF 20% 16V C2 1-123-318-00 ELECT 33MF 20% 16V C3 1-123-318-00 ELECT 33MF 20% 16V C4 1-102-531-00 CERAMIC 150PF 5% 50V C5 1-102-531-00 CERAMIC 150PF 5% 50V C6 1-102-973-00 CERAMIC 100PF 5% 50V C7 1-123-380-00 ELECT 1MF 20% 50V C8 1-123-332-00 ELECT 47MF 20% 16V C9 1-106-188-00 MYLAR 0.0047MF 5% 100V C10 1-129-927-00 FILM 0.015MF 5% 100V C11 1-102-824-00 CERAMIC 470PF 5% 50V C12 1-106-204-00 MYLAR 0.022MF 10% 100V C13 1-123-356-00 ELECT 10MF 20% 16V C14 1-123-333-00 ELECT 100MF 20% 16V C15 1-123-356-00 ELECT 10MF 20% 16V C16 1-123-380-00 ELECT 1MF 20% 50V C17 1-108-605-00 MYLAR 0.12MF 5% 50V C18 1-123-380-00 ELECT 1MF 20% 50V C19 1-106-216-00 MYLAR 0.068MF 10% 100V C20 1-121-806-00 ELECT 10MF 20% 16V C22 1-123-318-00 ELECT 33MF 20% 16V			
R47	1-212-361-00	METAL OXIDE	1.2 5% 1W F				
R48	1-214-140-00	METAL	2.2K 1% 1/4W				
R49	1-214-180-00	METAL	100K 1% 1/4W				
R50	1-214-132-00	METAL	1K 1% 1/4W				
R51	1-214-162-00	METAL	18K 1% 1/4W				
R52	1-214-162-00	METAL	18K 1% 1/4W	<div style="text-align: center;">CAPACITOR</div> C1 1-123-318-00 ELECT 33MF 20% 16V C2 1-123-318-00 ELECT 33MF 20% 16V C3 1-123-318-00 ELECT 33MF 20% 16V C4 1-102-531-00 CERAMIC 150PF 5% 50V C5 1-102-531-00 CERAMIC 150PF 5% 50V C6 1-102-973-00 CERAMIC 100PF 5% 50V C7 1-123-380-00 ELECT 1MF 20% 50V C8 1-123-332-00 ELECT 47MF 20% 16V C9 1-106-188-00 MYLAR 0.0047MF 5% 100V C10 1-129-927-00 FILM 0.015MF 5% 100V C11 1-102-824-00 CERAMIC 470PF 5% 50V C12 1-106-204-00 MYLAR 0.022MF 10% 100V C13 1-123-356-00 ELECT 10MF 20% 16V C14 1-123-333-00 ELECT 100MF 20% 16V C15 1-123-356-00 ELECT 10MF 20% 16V C16 1-123-380-00 ELECT 1MF 20% 50V C17 1-108-605-00 MYLAR 0.12MF 5% 50V C18 1-123-380-00 ELECT 1MF 20% 50V C19 1-106-216-00 MYLAR 0.068MF 10% 100V C20 1-121-806-00 ELECT 10MF 20% 16V C22 1-123-318-00 ELECT 33MF 20% 16V			
R53	1-214-140-00	METAL	2.2K 1% 1/4W				
R54	1-214-140-00	METAL	2.2K 1% 1/4W				
R55	1-214-156-00	METAL	10K 1% 1/4W				
R56	1-214-156-00	METAL	10K 1% 1/4W				
R57	1-214-156-00	METAL	10K 1% 1/4W	<div style="text-align: center;">CAPACITOR</div> C1 1-123-318-00 ELECT 33MF 20% 16V C2 1-123-318-00 ELECT 33MF 20% 16V C3 1-123-318-00 ELECT 33MF 20% 16V C4 1-102-531-00 CERAMIC 150PF 5% 50V C5 1-102-531-00 CERAMIC 150PF 5% 50V C6 1-102-973-00 CERAMIC 100PF 5% 50V C7 1-123-380-00 ELECT 1MF 20% 50V C8 1-123-332-00 ELECT 47MF 20% 16V C9 1-106-188-00 MYLAR 0.0047MF 5% 100V C10 1-129-927-00 FILM 0.015MF 5% 100V C11 1-102-824-00 CERAMIC 470PF 5% 50V C12 1-106-204-00 MYLAR 0.022MF 10% 100V C13 1-123-356-00 ELECT 10MF 20% 16V C14 1-123-333-00 ELECT 100MF 20% 16V C15 1-123-356-00 ELECT 10MF 20% 16V C16 1-123-380-00 ELECT 1MF 20% 50V C17 1-108-605-00 MYLAR 0.12MF 5% 50V C18 1-123-380-00 ELECT 1MF 20% 50V C19 1-106-216-00 MYLAR 0.068MF 10% 100V C20 1-121-806-00 ELECT 10MF 20% 16V C22 1-123-318-00 ELECT 33MF 20% 16V			
R58	1-246-997-00	CARBON	1.2 5% 1/4W F				
R59	1-202-637-00	SOLID	470K 5% 1/2W				
R60	1-202-637-00	SOLID	470K 5% 1/2W				
R61	1-202-631-00	SOLID	270K 5% 1/2W				
R62	1-202-631-00	SOLID	270K 5% 1/2W	<div style="text-align: center;">CAPACITOR</div> C1 1-123-318-00 ELECT 33MF 20% 16V C2 1-123-318-00 ELECT 33MF 20% 16V C3 1-123-318-00 ELECT 33MF 20% 16V C4 1-102-531-00 CERAMIC 150PF 5% 50V C5 1-102-531-00 CERAMIC 150PF 5% 50V C6 1-102-973-00 CERAMIC 100PF 5% 50V C7 1-123-380-00 ELECT 1MF 20% 50V C8 1-123-332-00 ELECT 47MF 20% 16V C9 1-106-188-00 MYLAR 0.0047MF 5% 100V C10 1-129-927-00 FILM 0.015MF 5% 100V C11 1-102-824-00 CERAMIC 470PF 5% 50V C12 1-106-204-00 MYLAR 0.022MF 10% 100V C13 1-123-356-00 ELECT 10MF 20% 16V C14 1-123-333-00 ELECT 100MF 20% 16V C15 1-123-356-00 ELECT 10MF 20% 16V C16 1-123-380-00 ELECT 1MF 20% 50V C17 1-108-605-00 MYLAR 0.12MF 5% 50V C18 1-123-380-00 ELECT 1MF 20% 50V C19 1-106-216-00 MYLAR 0.068MF 10% 100V C20 1-121-806-00 ELECT 10MF 20% 16V C22 1-123-318-00 ELECT 33MF 20% 16V			
R63	1-247-725-11	CARBON	10K 5% 1/4W				
R64	1-247-713-11	CARBON	1K 5% 1/4W				
R65	1-247-137-00	CARBON	1.8K 5% 1/4W				
R66	1-246-520-00	CARBON	91K 5% 1/4W				
R67	1-247-171-00	CARBON	47K 5% 1/4W	<div style="text-align: center;">CAPACITOR</div> C1 1-123-318-00 ELECT 33MF 20% 16V C2 1-123-318-00 ELECT 33MF 20% 16V C3 1-123-318-00 ELECT 33MF 20% 16V C4 1-102-531-00 CERAMIC 150PF 5% 50V C5 1-102-531-00 CERAMIC 150PF 5% 50V C6 1-102-973-00 CERAMIC 100PF 5% 50V C7 1-123-380-00 ELECT 1MF 20% 50V C8 1-123-332-00 ELECT 47MF 20% 16V C9 1-106-188-00 MYLAR 0.0047MF 5% 100V C10 1-129-927-00 FILM 0.015MF 5% 100V C11 1-102-824-00 CERAMIC 470PF 5% 50V C12 1-106-204-00 MYLAR 0.022MF 10% 100V C13 1-123-356-00 ELECT 10MF 20% 16V C14 1-123-333-00 ELECT 100MF 20% 16V C15 1-123-356-00 ELECT 10MF 20% 16V C16 1-123-380-00 ELECT 1MF 20% 50V C17 1-108-605-00 MYLAR 0.12MF 5% 50V C18 1-123-380-00 ELECT 1MF 20% 50V C19 1-106-216-00 MYLAR 0.068MF 10% 100V C20 1-121-806-00 ELECT 10MF 20% 16V C22 1-123-318-00 ELECT 33MF 20% 16V			
R68	1-214-156-00	METAL	10K 1% 1/4W				
R69	1-214-156-00	METAL	10K 1% 1/4W				
R70	1-247-725-11	CARBON	10K 5% 1/4W				
R71	1-246-527-00	CARBON	180K 5% 1/4W				
R72	1-247-725-11	CARBON	10K 5% 1/4W	<div style="text-align: center;">CAPACITOR</div> C1 1-123-318-00 ELECT 33MF 20% 16V C2 1-123-318-00 ELECT 33MF 20% 16V C3 1-123-318-00 ELECT 33MF 20% 16V C4 1-102-531-00 CERAMIC 150PF 5% 50V C5 1-102-531-00 CERAMIC 150PF 5% 50V C6 1-102-973-00 CERAMIC 100PF 5% 50V C7 1-123-380-00 ELECT 1MF 20% 50V C8 1-123-332-00 ELECT 47MF 20% 16V C9 1-106-188-00 MYLAR 0.0047MF 5% 100V C10 1-129-927-00 FILM 0.015MF 5% 100V C11 1-102-824-00 CERAMIC 470PF 5% 50V C12 1-106-204-00 MYLAR 0.022MF 10% 100V C13 1-123-356-00 ELECT 10MF 20% 16V C14 1-123-333-00 ELECT 100MF 20% 16V C15 1-123-356-00 ELECT 10MF 20% 16V C16 1-123-380-00 ELECT 1MF 20% 50V C17 1-108-605-00 MYLAR 0.12MF 5% 50V C18 1-123-380-00 ELECT 1MF 20% 50V C19 1-106-216-00 MYLAR 0.068MF 10% 100V C20 1-121-806-00 ELECT 10MF 20% 16V C22 1-123-318-00 ELECT 33MF 20% 16V			
R73	1-247-725-11	CARBON	10K 5% 1/4W				
R74	1-214-173-00	METAL	51K 1% 1/4W				

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C23	1-123-318-00	ELECT	33MF 20% 16V			<u>COIL</u>	
C24	1-101-004-00	CERAMIC	0.01MF 50V	L1	1-408-243-00	MICRO INDUCTOR 12MMH	
C25	1-130-457-00	FILM	0.1MF 5% 100V	L2	1-408-243-00	MICRO INDUCTOR 12MMH	
C26	1-123-318-00	ELECT	33MF 20% 16V			<u>TRANSISTOR</u>	
C27	1-123-318-00	ELECT	33MF 20% 16V				
C28	1-123-318-00	ELECT	33MF 20% 16V	Q1	8-729-600-27	TRANSISTOR 2SC634SP	
C29	1-102-820-00	CERAMIC	330PF 5% 50V	Q2	8-729-173-37	TRANSISTOR 2SA733-P	
C30	1-129-899-00	FILM	0.056MF 2% 100V	Q3	8-729-173-37	TRANSISTOR 2SA733-P	
C31	1-106-196-00	MYLAR	0.01MF 10% 100V	Q4	8-729-600-27	TRANSISTOR 2SC634SP	
C32	1-130-072-00	FILM	0.022MF 2% 100V	Q5	8-729-173-37	TRANSISTOR 2SA733-P	
C33	1-129-899-00	FILM	0.056MF 2% 100V	Q6	8-729-600-27	TRANSISTOR 2SC634SP	
C34	1-106-196-00	MYLAR	0.01MF 10% 100V	Q7	8-729-600-27	TRANSISTOR 2SC634SP	
C35	1-123-318-00	ELECT	33MF 20% 16V	Q8	8-729-173-37	TRANSISTOR 2SA733-P	
C36	1-130-457-00	FILM	0.1MF 5% 100V	Q9	8-729-600-27	TRANSISTOR 2SC634SP	
C37	1-123-318-00	ELECT	33MF 20% 16V	Q10	8-729-600-27	TRANSISTOR 2SC634SP	
C38	1-123-381-00	ELECT	2.2MF 20% 50V	Q11	8-729-600-27	TRANSISTOR 2SC634SP	
C39	1-130-457-00	FILM	0.1MF 5% 100V	Q12	8-761-622-00	TRANSISTOR 2SC1636	
C40	1-108-603-00	MYLAR	0.1MF 5% 50V	Q13	8-761-622-00	TRANSISTOR 2SC1636	
C41	1-108-603-00	MYLAR	0.1MF 5% 50V	Q14	8-761-622-00	TRANSISTOR 2SC1636	
C42	1-102-973-00	CERAMIC	100PF 5% 50V	Q15	8-729-600-27	TRANSISTOR 2SC634SP	
C43	1-101-006-00	CERAMIC	0.047MF 50V	Q16	8-729-600-27	TRANSISTOR 2SC634SP	
C44	1-101-006-00	CERAMIC	0.047MF 50V	Q17	8-729-600-27	TRANSISTOR 2SC634SP	
		<u>DIODE</u>		Q18	8-769-192-00	TRANSISTOR 2SK43-2	
D1	8-719-815-55	DIODE 1S1555		Q19	8-729-600-27	TRANSISTOR 2SC634SP	
D2	8-719-815-55	DIODE 1S1555		Q20	8-729-600-27	TRANSISTOR 2SC634SP	
D3	8-719-103-09	DIODE RD15E-N1		Q21	8-729-600-27	TRANSISTOR 2SC634SP	
D4	8-719-815-55	DIODE 1S1555		Q22	8-729-600-27	TRANSISTOR 2SC634SP	
D5	8-719-815-55	DIODE 1S1555		Q23	8-769-192-00	TRANSISTOR 2SK43-2	
D6	8-719-815-55	DIODE 1S1555		Q24	8-729-600-27	TRANSISTOR 2SC634SP	
D7	8-719-815-55	DIODE 1S1555		Q25	8-769-192-00	TRANSISTOR 2SK43-2	
D8	8-719-815-55	DIODE 1S1555				<u>RESISTOR</u>	
D9	8-719-815-55	DIODE 1S1555		R1	1-249-429-11	CARBON 10K 5% 1/6W	
		<u>CONNECTOR</u>		R2	1-247-850-00	CARBON 6.2K 5% 1/6W	
DA1	*1-561-796-00	SOCKET, CONNECTOR 15P		R3	1-247-838-00	CARBON 2K 5% 1/6W	
DA2	*1-561-796-00	SOCKET, CONNECTOR 22P		R4	1-249-429-11	CARBON 10K 5% 1/6W	
		<u>IC</u>		R5	1-247-859-00	CARBON 15K 5% 1/6W	
IC1	8-759-901-23	IC SN74LS123N		R6	1-214-143-00	METAL 3K 1% 1/4W	
IC2	8-751-580-00	IC CX158		R7	1-214-139-00	METAL 2K 1% 1/4W	
IC3	8-759-145-58	IC UPC4558C		R8	1-214-139-00	METAL 2K 1% 1/4W	
IC4	8-759-729-03	IC NJM2903D		R9	1-249-429-11	CARBON 10K 5% 1/6W	
IC5	8-759-115-55	IC UPC1555C		R10	1-247-840-00	CARBON 2.4K 5% 1/6W	
IC6	8-759-115-55	IC UPC1555C		R11	1-247-859-00	CARBON 15K 5% 1/6W	
IC7	8-759-145-58	IC UPC4558C		R12	1-249-437-11	CARBON 47K 5% 1/6W	
IC8	8-759-145-58	IC UPC4558C		R13	1-249-429-11	CARBON 10K 5% 1/6W	
IC9	8-759-145-58	IC UPC4558C		R14	1-249-429-11	CARBON 10K 5% 1/6W	
IC10	8-759-900-00	IC SN74LS00N		R15	1-214-149-00	METAL 5.1K 1% 1/4W	
IC11	8-759-900-10	IC SN74LS10N		R16	1-247-838-00	CARBON 2K 5% 1/6W	
IC12	8-759-974-06	IC SN7406N		R17	1-247-859-00	CARBON 15K 5% 1/6W	
				R18	1-249-429-11	CARBON 10K 5% 1/6W	
				R19	1-247-850-00	CARBON 6.2K 5% 1/6W	
				R20	1-214-165-00	METAL 24K 1% 1/4W	

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R21	1-247-872-00	CARBON	51K 5% 1/6W	R74	1-249-429-11	CARBON	10K 5% 1/6W
R22	1-249-429-11	CARBON	10K 5% 1/6W	R75	1-247-857-00	CARBON	12K 5% 1/6W
R23	1-247-840-00	CARBON	2.4K 5% 1/6W	R76	1-214-162-00	METAL	18K 1% 1/4W
R24	1-247-843-00	CARBON	3.3K 5% 1/6W	R77	1-214-151-00	METAL	6.2K 1% 1/4W
R25	1-249-419-11	CARBON	1.5K 5% 1/6W	R78	1-249-429-11	CARBON	10K 5% 1/6W
R26	1-214-132-00	METAL	1K 1% 1/4W	R79	1-247-857-00	CARBON	12K 5% 1/6W
R27	1-247-797-00	CARBON	39 5% 1/8W F	R80	1-247-879-00	CARBON	100K 5% 1/6W
R28	1-247-844-00	CARBON	3.6K 5% 1/6W	R81	1-247-879-00	CARBON	100K 5% 1/6W
R29	1-247-849-00	CARBON	5.6K 5% 1/6W	R82	1-246-545-00	SOLID	1M 5% 1/4W
R30	1-214-146-00	METAL	3.9K 1% 1/4W	R83	1-214-164-00	METAL	22K 1% 1/4W
R31	1-214-154-00	METAL	8.2K 1% 1/4W	R84	1-247-848-00	CARBON	5.1K 5% 1/6W
R32	1-214-138-00	METAL	1.8K 1% 1/4W	R85	1-247-848-00	CARBON	5.1K 5% 1/6W
R33	1-249-429-11	CARBON	10K 5% 1/6W	R86	1-214-155-00	METAL	9.1K 1% 1/4W
R34	1-249-421-11	CARBON	2.2K 5% 1/6W	R87	1-214-132-00	METAL	1K 1% 1/4W
R35	1-247-859-00	CARBON	15K 5% 1/6W	R88	1-249-437-11	CARBON	47K 5% 1/6W
R36	1-247-842-00	CARBON	3K 5% 1/6W	R89	1-249-437-11	CARBON	47K 5% 1/6W
R37	1-247-807-00	CARBON	100 5% 1/6W	R90	1-249-437-11	CARBON	47K 5% 1/6W
R38	1-213-155-00	METAL OXIDE	10K 5% 1W F	R91	1-249-429-11	CARBON	10K 5% 1/6W
R39	1-247-815-00	CARBON	220 5% 1/6W	R92	1-214-148-00	METAL	4.7K 1% 1/4W
R40	1-247-791-00	CARBON	22 5% 1/6W	R93	1-246-545-00	SOLID	1M 5% 1/4W
R41	1-249-429-11	CARBON	10K 5% 1/6W	R94	1-247-879-00	CARBON	100K 5% 1/6W
R42	1-249-437-11	CARBON	47K 5% 1/6W	R95	1-214-156-00	METAL	10K 1% 1/4W
R43	1-249-437-11	CARBON	47K 5% 1/6W	R96	1-214-132-00	METAL	1K 1% 1/4W
R44	1-247-887-00	CARBON	220K 5% 1/6W	R97	1-214-156-00	METAL	10K 1% 1/4W
R45	1-247-879-00	CARBON	100K 5% 1/6W	R98	1-214-156-00	METAL	10K 1% 1/4W
R46	1-247-840-00	CARBON	2.4K 5% 1/6W	R99	1-249-429-11	CARBON	10K 5% 1/6W
R47	1-249-429-11	CARBON	10K 5% 1/6W	R100	1-214-179-00	METAL	91K 1% 1/4W
R48	1-247-872-00	CARBON	51K 5% 1/6W	R101	1-212-718-00	METAL	470K 1% 1/2W
R49	1-247-863-00	CARBON	22K 5% 1/6W	R102	1-202-473-00	SOLID	5.6M 5% 1/4W
R50	1-249-429-11	CARBON	10K 5% 1/6W	R103	1-249-437-11	CARBON	47K 5% 1/6W
R51	1-249-437-11	CARBON	47K 5% 1/6W	R104	1-202-431-17	SOLID	100K 5% 1/4W
R52	1-247-879-00	CARBON	100K 5% 1/6W	R105	1-214-156-00	METAL	10K 1% 1/4W
R53	1-212-718-00	METAL	470K 1% 1/2W	R106	1-214-156-00	METAL	10K 1% 1/4W
R54	1-214-179-00	METAL	91K 1% 1/4W	R107	1-214-163-00	METAL	20K 1% 1/4W
R55	1-247-807-00	CARBON	100 5% 1/6W	R108	1-214-156-00	METAL	10K 1% 1/4W
R56	1-214-156-00	METAL	10K 1% 1/4W	R109	1-214-156-00	METAL	10K 1% 1/4W
R57	1-214-154-00	METAL	8.2K 1% 1/4W	R110	1-214-116-00	METAL	220 1% 1/4W
R58	1-214-138-00	METAL	1.8K 1% 1/4W	R111	1-214-141-00	METAL	2.4K 1% 1/4W
R59	1-214-180-00	METAL	100K 1% 1/4W	R112	1-214-124-00	METAL	470 1% 1/4W
R60	1-214-156-00	METAL	10K 1% 1/4W	R113	1-202-473-00	SOLID	5.6M 5% 1/4W
R61	1-214-132-00	METAL	1K 1% 1/4W	R114	1-214-179-00	METAL	91K 1% 1/4W
R62	1-246-545-00	SOLID	1M 5% 1/4W	R115	1-212-718-00	METAL	470K 1% 1/2W
R63	1-247-872-00	CARBON	51K 5% 1/6W	R116	1-247-879-00	CARBON	100K 5% 1/6W
R64	1-246-545-00	SOLID	1M 5% 1/4W	R117	1-249-437-11	CARBON	47K 5% 1/6W
R65	1-247-872-00	CARBON	51K 5% 1/6W	R118	1-202-431-17	SOLID	100K 5% 1/4W
R66	1-246-545-00	SOLID	1M 5% 1/4W	R119	1-214-156-00	METAL	10K 1% 1/4W
R67	1-247-872-00	CARBON	51K 5% 1/6W	R120	1-246-545-00	SOLID	1M 5% 1/4W
R68	1-214-116-00	METAL	220 1% 1/4W	R121	1-246-545-00	SOLID	1M 5% 1/4W
R69	1-214-125-00	METAL	510 1% 1/4W	R122	1-246-545-00	SOLID	1M 5% 1/4W
R70	1-214-160-00	METAL	15K 1% 1/4W	R123	1-247-872-00	CARBON	51K 5% 1/6W
R71	1-214-149-00	METAL	5.1K 1% 1/4W	R124	1-247-872-00	CARBON	51K 5% 1/6W
R72	1-214-141-00	METAL	2.4K 1% 1/4W	R125	1-247-872-00	CARBON	51K 5% 1/6W
R73	1-214-160-00	METAL	15K 1% 1/4W	R126	1-247-891-00	CARBON	330K 5% 1/6W

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Ref.No.	Part No.	Description			Remark	Ref.No.	Part No.	Description			Remark
R127	1-246-545-00	SOLID	1M	5%	1/4W	C13	1-102-942-00	CERAMIC	5PF	0.5PF	50V
R128	1-214-168-00	METAL	33K	1%	1/4W	C14	1-108-603-00	MYLAR	0.1MF	5%	50V
R129	1-214-172-00	METAL	47K	1%	1/4W	C15	1-123-318-00	ELECT	33MF	20%	16V
R130	1-214-154-00	METAL	8.2K	1%	1/4W	C16	1-123-318-00	ELECT	33MF	20%	16V
R131	1-249-429-11	CARBON	10K	5%	1/6W	C17	1-123-380-00	ELECT	1MF	20%	50V
R132	1-249-429-11	CARBON	10K	5%	1/6W	C18	1-108-603-00	MYLAR	0.1MF	5%	50V
R133	1-249-429-11	CARBON	10K	5%	1/6W	C19	1-123-318-00	ELECT	33MF	20%	16V
R134	1-249-429-11	CARBON	10K	5%	1/6W	C20	1-123-318-00	ELECT	33MF	20%	16V
R135	1-249-429-11	CARBON	10K	5%	1/6W	C21	1-123-380-00	ELECT	1MF	20%	50V
R136	1-247-852-00	CARBON	7.5K	5%	1/6W	C22	1-108-603-00	MYLAR	0.1MF	5%	50V
R137	1-249-425-11	CARBON	4.7K	5%	1/6W	C24	1-123-318-00	ELECT	33MF	20%	16V
R138	1-249-425-11	CARBON	4.7K	5%	1/6W	C25	1-123-318-00	ELECT	33MF	20%	16V
R139	1-247-864-00	CARBON	24K	5%	1/6W	C26	1-102-848-00	CERAMIC	180PF	5%	50V
R141	1-212-718-00	METAL	470K	1%	1/2W	C27	1-123-356-00	ELECT	10MF	20%	25V
R142	1-214-145-00	METAL	3.6K	1%	1/4W	C28	1-104-077-00	POLYSTYRENE	0.001MF	5%	50V
R143	1-247-838-00	CARBON	2K	5%	1/6W	C29	1-123-318-00	ELECT	33MF	20%	16V
VARIABLE RESISTOR						C30	1-123-318-00	ELECT	33MF	20%	16V
RV1	1-224-941-00	RES, ADJ, CERMET	20K			C31	1-130-457-00	FILM	0.1MF	5%	100V
RV2	1-224-942-00	RES, ADJ, CERMET	50K			C32	1-104-077-00	POLYSTYRENE	0.001MF	5%	50V
RV3	1-224-941-00	RES, ADJ, CERMET	20K			C33	1-130-203-00	FILM	0.01MF	5%	50V
RV4	1-228-288-00	RES, ADJ, CERMET	100			C36	1-106-196-00	MYLAR	0.01MF	10%	100V
RV5	1-224-937-00	RES, ADJ, CERMET	1K			C37	1-123-318-00	ELECT	33MF	20%	16V
RV6	1-224-936-00	RES, ADJ, CERMET	500			C38	1-123-318-00	ELECT	33MF	20%	16V
RV7	1-224-939-00	RES, ADJ, CERMET	5K			C39	1-102-820-00	CERAMIC	330PF	5%	50V
RV8	1-224-922-00	RES, ADJ, METAL FILM	50K			C40	1-123-932-00	ELECT	4.7MF		160V
RV9	1-224-938-00	RES, ADJ, CERMET	2K			C41	1-102-973-00	CERAMIC	100PF	5%	50V
RV10	1-224-940-00	RES, ADJ, CERMET	10K			C42	1-102-959-00	CERAMIC	22PF	5%	50V
RV11	1-224-940-00	RES, ADJ, CERMET	10K			C43	1-101-001-00	CERAMIC	0.001MF		50V
RV12	1-224-920-00	RES, ADJ, METAL FILM	10K			DIODE					
SWITCH						D1	8-719-300-76	DIODE	RH1A		
S1	1-552-898-00	SWITCH, TOGGLE				D3	8-719-815-55	DIODE	1S1555		
S2	1-552-898-00	SWITCH, TOGGLE				D5	8-719-815-55	DIODE	1S1555		
*****						D6	8-719-815-55	DIODE	1S1555		
*****						CONNECTOR					
*****						DB1	*1-561-796-00	SOCKET, CONNECTOR	15P		
*****						DB2	*1-561-796-00	SOCKET, CONNECTOR	22P		
*****						IC					
*****						IC1	8-759-115-55	IC	UPC1555C		
*****						IC2	8-759-901-23	IC	SN74LS123N		
*****						IC3	8-759-903-16	IC	LM318P		
*****						IC4	8-759-145-58	IC	UPC4558C		
*****						IC5	8-759-145-58	IC	UPC4558C		
*****						IC6	8-759-271-58	IC	TA7158P		
*****						IC7	8-759-271-58	IC	TA7158P		
*****						IC8	8-759-145-58	IC	UPC4558C		
*****						IC9	8-759-145-58	IC	UPC4558C		
*****						IC10	8-759-131-11	IC	UPC311C		
*****						IC11	8-759-131-11	IC	UPC311C		
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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
TRANSISTOR				R26	1-246-545-00	SOLID 1M 5% 1/4W	
Q1	8-729-600-27	TRANSISTOR 2SC634SP		R27	1-246-545-00	SOLID 1M 5% 1/4W	
Q2	8-729-699-51	TRANSISTOR 2SA995		R28	1-202-473-00	SOLID 5.6M 5% 1/4W	
Q3	8-729-105-71	TRANSISTOR 2SK523-K2		R29	1-202-473-00	SOLID 5.6M 5% 1/4W	
Q4	8-729-105-71	TRANSISTOR 2SK523-K2		R30	1-202-473-00	SOLID 5.6M 5% 1/4W	
Q5	8-729-105-71	TRANSISTOR 2SK523-K2		R31	1-202-473-00	SOLID 5.6M 5% 1/4W	
Q6	8-729-105-71	TRANSISTOR 2SK523-K2		R32	1-214-168-00	METAL 33K 1% 1/4W	
Q7	8-729-105-71	TRANSISTOR 2SK523-K2		R33	1-214-173-00	METAL 51K 1% 1/4W	
Q8	8-729-105-71	TRANSISTOR 2SK523-K2		R34	1-246-545-00	SOLID 1M 5% 1/4W	
Q9	8-729-600-27	TRANSISTOR 2SC634SP		R35	1-202-473-00	SOLID 5.6M 5% 1/4W	
Q10	8-729-600-27	TRANSISTOR 2SC634SP		R36	1-214-163-00	METAL 20K 1% 1/4W	
Q11	8-729-600-27	TRANSISTOR 2SC634SP		R37	1-214-173-00	METAL 51K 1% 1/4W	
Q12	8-729-699-51	TRANSISTOR 2SA995		R38	1-214-180-00	METAL 100K 1% 1/4W	
Q13	8-729-105-71	TRANSISTOR 2SK523-K2		R39	1-247-848-00	CARBON 5.1K 5% 1/6W	
Q14	8-729-603-50	TRANSISTOR 2SC403SP		R40	1-214-180-00	METAL 100K 1% 1/4W	
Q15	8-729-600-27	TRANSISTOR 2SC634SP		R41	1-214-164-00	METAL 22K 1% 1/4W	
Q16	8-729-600-27	TRANSISTOR 2SC634SP		R42	1-214-164-00	METAL 22K 1% 1/4W	
Q17	8-729-105-71	TRANSISTOR 2SK523-K2		R43	1-214-156-00	METAL 10K 1% 1/4W	
Q18	8-729-600-27	TRANSISTOR 2SC634SP		R44	1-214-156-00	METAL 10K 1% 1/4W	
Q19	8-729-600-27	TRANSISTOR 2SC634SP		R45	1-214-149-00	METAL 5.1K 1% 1/4W	
Q20	8-729-105-71	TRANSISTOR 2SK523-K2		R46	1-214-156-00	METAL 10K 1% 1/4W	
Q21	8-729-105-71	TRANSISTOR 2SK523-K2		R47	1-214-156-00	METAL 10K 1% 1/4W	
Q22	8-729-105-71	TRANSISTOR 2SK523-K2		R48	1-247-872-00	CARBON 51K 5% 1/6W	
Q23	8-729-600-27	TRANSISTOR 2SC634SP		R49	1-247-872-00	CARBON 51K 5% 1/6W	
Q24	8-729-603-50	TRANSISTOR 2SC403SP		R50	1-247-807-00	CARBON 100 5% 1/6W	
Q25	8-729-374-02	TRANSISTOR 2SB740		R51	1-249-429-11	CARBON 10K 5% 1/6W	
RESISTOR				R52	1-247-807-00	CARBON 100 5% 1/6W	
R1	1-247-848-00	CARBON 5.1K 5% 1/6W		R53	1-247-800-00	CARBON 51 5% 1/6W	
R2	1-214-180-00	METAL 100K 1% 1/4W		R54	1-247-848-00	CARBON 5.1K 5% 1/6W	
R3	1-214-132-00	METAL 1K 1% 1/4W		R55	1-247-848-00	CARBON 5.1K 5% 1/6W	
R4	1-214-166-00	METAL 27K 1% 1/4W		R56	1-249-429-11	CARBON 10K 5% 1/6W	
R5	1-249-425-11	CARBON 4.7K 5% 1/6W		R57	1-249-425-11	CARBON 4.7K 5% 1/6W	
R6	1-249-425-11	CARBON 4.7K 5% 1/6W		R58	1-249-429-11	CARBON 10K 5% 1/6W	
R7	1-214-156-00	METAL 10K 1% 1/4W		R59	1-247-848-00	CARBON 5.1K 5% 1/6W	
R8	1-214-140-00	METAL 2.2K 1% 1/4W		R60	1-247-848-00	CARBON 5.1K 5% 1/6W	
R9	1-249-429-11	CARBON 10K 5% 1/6W		R61	1-247-872-00	CARBON 51K 5% 1/6W	
R10	1-249-429-11	CARBON 10K 5% 1/6W		R62	1-247-807-00	CARBON 100 5% 1/6W	
R11	1-214-156-00	METAL 10K 1% 1/4W		R63	1-249-429-11	CARBON 10K 5% 1/6W	
R12	1-214-148-00	METAL 4.7K 1% 1/4W		R64	1-247-807-00	CARBON 100 5% 1/6W	
R13	1-214-134-00	METAL 1.2K 1% 1/4W		R65	1-247-800-00	CARBON 51 5% 1/6W	
R14	1-214-172-00	METAL 47K 1% 1/4W		R66	1-247-872-00	CARBON 51K 5% 1/6W	
R15	1-214-173-00	METAL 51K 1% 1/4W		R67	1-249-429-11	CARBON 10K 5% 1/6W	
R16	1-247-879-00	CARBON 100K 5% 1/6W		R68	1-249-425-11	CARBON 4.7K 5% 1/6W	
R17	1-247-844-00	CARBON 3.6K 5% 1/6W		R69	1-247-849-00	CARBON 5.6K 5% 1/6W	
R18	1-214-180-00	METAL 100K 1% 1/4W		R70	1-247-844-00	CARBON 3.6K 5% 1/6W	
R19	1-214-163-00	METAL 20K 1% 1/4W		R71	1-213-159-00	METAL OXIDE 22K 5% 1W F	
R20	1-214-144-00	METAL 3.3K 1% 1/4W		R72	1-249-421-11	CARBON 2.2K 5% 1/6W	
R21	1-214-140-00	METAL 2.2K 1% 1/4W		R73	1-214-148-00	METAL 4.7K 1% 1/4W	
R22	1-214-140-00	METAL 2.2K 1% 1/4W		R74	1-247-831-00	CARBON 1K 5% 1/6W	
R23	1-214-148-00	METAL 4.7K 1% 1/4W		R75	1-214-156-00	METAL 10K 1% 1/4W	
R24	1-246-545-00	SOLID 1M 5% 1/4W		R78	1-214-180-00	METAL 100K 1% 1/4W	
R25	1-246-545-00	SOLID 1M 5% 1/4W		R79	1-214-164-00	METAL 22K 1% 1/4W	
				R80	1-214-174-00	METAL 56K 1% 1/4W	

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R81	1-214-156-00	METAL	10K 1% 1/4W	R139	1-247-879-00	CARBON	100K 5% 1/6W
R83	1-214-132-00	METAL	1K 1% 1/4W	R140	1-214-132-00	METAL	1K 1% 1/4W
R84	1-247-807-00	CARBON	100 5% 1/6W	R141	1-214-132-00	METAL	1K 1% 1/4W
R85	1-249-429-11	CARBON	10K 5% 1/6W	R142	1-247-887-00	CARBON	220K 5% 1/6W
R87	1-202-473-00	SOLID	5.6M 5% 1/4W	VARIABLE RESISTOR			
R88	1-212-717-00	METAL	430K 1% 1/2W	RV1	1-224-921-11	RES, ADJ, METAL FILM 20K	
R89	1-214-945-00	METAL	2.2M 1% 1/2W	RV2	1-224-920-00	RES, ADJ, METAL FILM 10K	
R90	1-246-545-00	SOLID	1M 5% 1/4W	RV3	1-224-920-00	RES, ADJ, METAL FILM 10K	
R91	1-249-437-11	CARBON	47K 5% 1/6W	RV4	1-224-940-00	RES, ADJ, CERMET 10K	
R92	1-247-807-00	CARBON	100 5% 1/6W	RV5	1-224-938-00	RES, ADJ, CERMET 2K	
R93	1-214-180-00	METAL	100K 1% 1/4W	RV6	1-224-939-00	RES, ADJ, CERMET 5K	
R94	1-214-180-00	METAL	100K 1% 1/4W	RV7	1-224-920-00	RES, ADJ, METAL FILM 10K	
R95	1-214-945-00	METAL	2.2M 1% 1/2W	RV8	1-224-920-00	RES, ADJ, METAL FILM 10K	
R96	1-249-429-11	CARBON	10K 5% 1/6W	RV9	1-224-919-00	RES, ADJ, METAL FILM 5K	
R97	1-249-437-11	CARBON	47K 5% 1/6W	RV10	1-224-943-00	RES, ADJ, CERMET 100K	
R98	1-214-164-00	METAL	22K 1% 1/4W	RV11	1-224-917-00	RES, ADJ, METAL FILM 1K	
R99	1-214-172-00	METAL	47K 1% 1/4W	RV12	1-224-919-00	RES, ADJ, METAL FILM 5K	
R100	1-214-164-00	METAL	22K 1% 1/4W	RV13	1-224-916-00	RES, ADJ, METAL FILM 500	
R101	1-214-172-00	METAL	47K 1% 1/4W	RV14	1-224-940-00	RES, ADJ, CERMET 10K	
R102	1-214-180-00	METAL	100K 1% 1/4W	RV15	1-224-921-11	RES, ADJ, METAL FILM 20K	
R103	1-246-545-00	SOLID	1M 5% 1/4W	RV16	1-224-941-00	RES, ADJ, CERMET 20K	
R104	1-202-473-00	SOLID	5.6M 5% 1/4W	*****			
R105	1-246-545-00	SOLID	1M 5% 1/4W	*A-1345-334-A DC BOARD, COMPLETE			
R106	1-202-473-00	SOLID	5.6M 5% 1/4W	*****			
R107	1-246-545-00	SOLID	1M 5% 1/4W	CAPACITOR			
R108	1-202-473-00	SOLID	5.6M 5% 1/4W	C1	1-130-457-00	FILM	0.1MF 5% 100V
R109	1-214-170-00	METAL	39K 1% 1/4W	C2	1-102-824-00	CERAMIC	470PF 5% 50V
R110	1-213-163-00	METAL OXIDE	47K 5% 1W	C3	1-108-603-00	MYLAR	0.1MF 5% 50V
R111	1-249-429-11	CARBON	10K 5% 1/6W	C4	1-102-824-00	CERAMIC	470PF 5% 50V
R112	1-249-429-11	CARBON	10K 5% 1/6W	C5	1-123-380-00	ELECT	1MF 20% 50V
R113	1-249-437-11	CARBON	47K 5% 1/6W	C6	1-108-603-00	MYLAR	0.1MF 5% 50V
R114	1-213-155-00	METAL OXIDE	10K 5% 1W	C7	1-102-811-51	CERAMIC	9PF 1PF 50V
R115	1-214-110-00	METAL	120 1% 1/4W	C8	1-106-188-00	MYLAR	0.0047MF 10% 100V
R116	1-249-434-11	CARBON	27K 5% 1/6W	C9	1-123-318-00	ELECT	33MF 20% 16V
R119	1-214-162-00	METAL	18K 1% 1/4W	C10	1-106-196-00	MYLAR	0.01MF 10% 100V
R120	1-249-429-11	CARBON	10K 5% 1/6W	C11	1-130-457-00	FILM	0.1MF 5% 100V
R121	1-249-429-11	CARBON	10K 5% 1/6W	C12	1-102-824-00	CERAMIC	470PF 5% 50V
R122	1-214-126-00	METAL	560 1% 1/4W	C13	1-123-318-00	ELECT	33MF 20% 16V
R123	1-249-425-11	CARBON	4.7K 5% 1/6W	C14	1-106-196-00	MYLAR	0.01MF 10% 100V
R124	1-249-425-11	CARBON	4.7K 5% 1/6W	C15	1-130-203-00	FILM	0.01MF 5% 50V
R125	1-247-807-00	CARBON	100 5% 1/6W	C16	1-106-212-00	MYLAR	0.047MF 10% 100V
R126	1-212-376-00	METAL OXIDE	22 5% 1W	C17	1-108-637-00	MYLAR	0.082MF 10% 100V
R127	1-247-879-00	CARBON	100K 5% 1/6W	C18	1-106-214-00	MYLAR	0.056MF 10% 100V
R128	1-247-879-00	CARBON	100K 5% 1/6W	C19	1-108-603-00	MYLAR	0.1MF 5% 50V
R129	1-246-545-00	SOLID	1M 5% 1/4W	C20	1-123-380-00	ELECT	1MF 20% 50V
R130	1-249-437-11	CARBON	47K 5% 1/6W	C21	1-123-380-00	ELECT	1MF 20% 50V
R131	1-249-429-11	CARBON	10K 5% 1/6W	C22	1-123-307-00	ELECT	100MF 20% 6.3V
R132	1-249-437-11	CARBON	47K 5% 1/6W	C23	1-123-318-00	ELECT	33MF 20% 16V
R133	1-247-879-00	CARBON	100K 5% 1/6W	C24	1-106-196-00	MYLAR	0.01MF 10% 100V
R134	1-249-429-11	CARBON	10K 5% 1/6W	C25	1-106-196-00	MYLAR	0.01MF 10% 100V
R135	1-214-156-00	METAL	10K 1% 1/4W				
R136	1-214-149-00	METAL	5.1K 1% 1/4W				
R137	1-214-156-00	METAL	10K 1% 1/4W				

DC

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C26	1-123-318-00	ELECT 33MF 20% 16V		<u>TRANSISTOR</u>			
C27	1-123-318-00	ELECT 33MF 20% 16V		Q1	8-729-105-71	TRANSISTOR 2SK523-K2	
C28	1-123-318-00	ELECT 33MF 20% 16V		Q2	8-729-600-27	TRANSISTOR 2SC634SP	
C29	1-123-318-00	ELECT 33MF 20% 16V		Q3	8-729-105-71	TRANSISTOR 2SK523-K2	
C30	1-123-318-00	ELECT 33MF 20% 16V		Q4	8-729-600-27	TRANSISTOR 2SC634SP	
C31	1-123-318-00	ELECT 33MF 20% 16V		Q5	8-729-173-37	TRANSISTOR 2SA733-P	
C32	1-123-318-00	ELECT 33MF 20% 16V		Q6	8-729-105-71	TRANSISTOR 2SK523-K2	
C33	1-123-318-00	ELECT 33MF 20% 16V		Q7	8-729-105-71	TRANSISTOR 2SK523-K2	
C34	1-123-318-00	ELECT 33MF 20% 16V		Q8	8-729-105-71	TRANSISTOR 2SK523-K2	
C35	1-106-196-00	MYLAR 0.01MF 10% 100V		Q9	8-729-105-71	TRANSISTOR 2SK523-K2	
C36	1-123-307-00	ELECT 100MF 20% 6.3V		Q10	8-729-105-71	TRANSISTOR 2SK523-K2	
C37	1-101-006-00	CERAMIC 0.047MF 50V		Q11	8-729-105-71	TRANSISTOR 2SK523-K2	
<u>DIODE</u>				Q12	8-729-600-27	TRANSISTOR 2SC634SP	
D1	8-719-815-55	DIODE 1S1555		Q13	8-729-600-27	TRANSISTOR 2SC634SP	
D2	8-719-815-55	DIODE 1S1555		Q14	8-729-600-27	TRANSISTOR 2SC634SP	
D3	8-719-815-55	DIODE 1S1555		Q15	8-729-600-27	TRANSISTOR 2SC634SP	
D4	8-719-815-55	DIODE 1S1555		Q16	8-729-600-27	TRANSISTOR 2SC634SP	
D5	8-719-815-55	DIODE 1S1555		Q17	8-729-600-27	TRANSISTOR 2SC634SP	
D6	8-719-815-55	DIODE 1S1555		Q18	8-729-173-37	TRANSISTOR 2SA733-P	
D7	8-719-815-55	DIODE 1S1555		Q19	8-729-600-27	TRANSISTOR 2SC634SP	
D8	8-719-815-55	DIODE 1S1555		Q20	8-729-173-37	TRANSISTOR 2SA733-P	
D9	8-719-815-55	DIODE 1S1555		Q21	8-729-600-27	TRANSISTOR 2SC634SP	
D10	8-719-815-55	DIODE 1S1555		Q22	8-729-173-37	TRANSISTOR 2SA733-P	
D11	8-719-815-55	DIODE 1S1555		Q23	8-729-600-27	TRANSISTOR 2SC634SP	
D12	8-719-815-55	DIODE 1S1555		<u>RESISTOR</u>			
D13	8-719-815-55	DIODE 1S1555		R1	1-214-179-00	METAL 91K 1% 1/4W	
D14	8-719-815-55	DIODE 1S1555		R2	1-247-879-00	CARBON 100K 5% 1/6W	
D15	8-719-815-55	DIODE 1S1555		R3	1-202-473-00	SOLID 5.6M 5% 1/4W	
D16	8-719-815-55	DIODE 1S1555		R4	1-214-156-00	METAL 10K 1% 1/4W	
D17	8-719-815-55	DIODE 1S1555		R5	1-214-156-00	METAL 10K 1% 1/4W	
<u>CONNECTOR</u>				R6	1-214-156-00	METAL 10K 1% 1/4W	
DC1	*1-561-796-00	SOCKET, CONNECTOR 15P		R7	1-212-718-00	METAL 470K 1% 1/2W	
DC2	*1-561-796-00	SOCKET, CONNECTOR 22P		R8	1-212-718-00	METAL 470K 1% 1/2W	
<u>IC</u>				R9	1-249-437-11	CARBON 47K 5% 1/6W	
IC1	8-759-145-58	IC UPC4558C		R10	1-247-888-00	CARBON 240K 5% 1/6W	
IC2	8-759-145-58	IC UPC4558C		R11	1-214-156-00	METAL 10K 1% 1/4W	
IC3	8-759-145-58	IC UPC4558C		R12	1-214-167-00	METAL 30K 1% 1/4W	
IC4	8-759-115-55	IC UPC1555C		R13	1-214-156-00	METAL 10K 1% 1/4W	
IC5	8-759-115-55	IC UPC1555C		R14	1-246-545-00	SOLID 1M 5% 1/4W	
IC6	8-759-271-58	IC TA7158P		R15	1-214-156-00	METAL 10K 1% 1/4W	
IC7	8-759-145-58	IC UPC4558C		R16	1-214-180-00	METAL 100K 1% 1/4W	
IC8	8-759-145-58	IC UPC4558C		R17	1-202-473-00	SOLID 5.6M 5% 1/4W	
IC9	8-759-145-58	IC UPC4558C		R18	1-249-429-11	CARBON 10K 5% 1/6W	
IC10	8-759-145-58	IC UPC4558C		R19	1-249-429-11	CARBON 10K 5% 1/6W	
IC11	8-759-271-58	IC TA7158P		R20	1-247-777-00	CARBON 5.6 5% 1/8W	F
<u>COIL</u>				R21	1-247-777-00	CARBON 5.6 5% 1/8W	F
L1	1-408-243-00	MICRO INDUCTOR 12MMH		R22	1-213-139-00	METAL OXIDE 470 5% 1W	F
L2	1-408-247-00	MICRO INDUCTOR 33MMH		R23	1-214-149-00	METAL 5.1K 1% 1/4W	
				R24	1-213-124-00	METAL OXIDE 27 5% 1W	F
				R25	1-214-132-00	METAL 1K 1% 1/4W	
				R26	1-246-545-00	SOLID 1M 5% 1/4W	

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R27	1-202-473-00	SOLID	5.6M 5% 1/4W	R80	1-249-429-11	CARBON	10K 5% 1/6W
R28	1-214-149-00	METAL	5.1K 1% 1/4W	R81	1-249-429-11	CARBON	10K 5% 1/6W
R29	1-246-545-00	SOLID	1M 5% 1/4W	R82	1-214-156-00	METAL	10K 1% 1/4W
R30	1-202-473-00	SOLID	5.6M 5% 1/4W	R83	1-214-156-00	METAL	10K 1% 1/4W
R31	1-214-149-00	METAL	5.1K 1% 1/4W	R84	1-214-156-00	METAL	10K 1% 1/4W
R32	1-246-545-00	SOLID	1M 5% 1/4W	R85	1-249-429-11	CARBON	10K 5% 1/6W
R33	1-202-473-00	SOLID	5.6M 5% 1/4W	R86	1-249-429-11	CARBON	10K 5% 1/6W
R34	1-214-172-00	METAL	47K 1% 1/4W	R87	1-249-429-11	CARBON	10K 5% 1/6W
R35	1-249-429-11	CARBON	10K 5% 1/6W	R88	1-214-156-00	METAL	10K 1% 1/4W
R36	1-249-429-11	CARBON	10K 5% 1/6W	R89	1-214-156-00	METAL	10K 1% 1/4W
R37	1-246-545-00	SOLID	1M 5% 1/4W	R90	1-214-156-00	METAL	10K 1% 1/4W
R38	1-202-473-00	SOLID	5.6M 5% 1/4W	R91	1-249-429-11	CARBON	10K 5% 1/6W
R39	1-249-429-11	CARBON	10K 5% 1/6W	R92	1-249-429-11	CARBON	10K 5% 1/6W
R40	1-247-862-00	CARBON	20K 5% 1/6W	R93	1-247-777-00	CARBON	5.6 5% 1/8W F
R41	1-214-170-00	METAL	39K 1% 1/4W	R94	1-247-777-00	CARBON	5.6 5% 1/8W F
R42	1-202-447-17	SOLID	470K 5% 1/4W	R95	1-214-156-00	METAL	10K 1% 1/4W
R43	1-202-473-00	SOLID	5.6M 5% 1/4W	R96	1-214-108-00	METAL	100 1% 1/4W
R44	1-214-132-00	METAL	1K 1% 1/4W	R97	1-214-156-00	METAL	10K 1% 1/4W
R45	1-214-132-00	METAL	1K 1% 1/4W	R98	1-214-180-00	METAL	100K 1% 1/4W
R46	1-249-429-11	CARBON	10K 5% 1/6W	R99	1-214-156-00	METAL	10K 1% 1/4W
R47	1-214-163-00	METAL	20K 1% 1/4W	R100	1-214-149-00	METAL	5.1K 1% 1/4W
R48	1-247-816-00	CARBON	240 5% 1/6W	R101	1-214-156-00	METAL	10K 1% 1/4W
R49	1-246-545-00	SOLID	1M 5% 1/4W	R102	1-249-429-11	CARBON	10K 5% 1/6W
R50	1-202-473-00	SOLID	5.6M 5% 1/4W	R103	1-249-429-11	CARBON	10K 5% 1/6W
R51	1-214-156-00	METAL	10K 1% 1/4W	R104	1-247-777-00	CARBON	5.6 5% 1/8W F
R52	1-214-156-00	METAL	10K 1% 1/4W	R105	1-247-777-00	CARBON	5.6 5% 1/8W F
R53	1-249-429-11	CARBON	10K 5% 1/6W	R106	1-214-156-00	METAL	10K 1% 1/4W
R54	1-247-864-00	CARBON	24K 5% 1/6W	R107	1-214-156-00	METAL	10K 1% 1/4W
R55	1-249-425-11	CARBON	4.7K 5% 1/6W	R108	1-214-156-00	METAL	10K 1% 1/4W
R56	1-249-425-11	CARBON	4.7K 5% 1/6W	R109	1-249-429-11	CARBON	10K 5% 1/6W
R57	1-249-425-11	CARBON	4.7K 5% 1/6W	R110	1-249-429-11	CARBON	10K 5% 1/6W
R58	1-249-425-11	CARBON	4.7K 5% 1/6W	R111	1-247-777-00	CARBON	5.6 5% 1/8W F
R59	1-214-156-00	METAL	10K 1% 1/4W	R112	1-247-777-00	CARBON	5.6 5% 1/8W F
R60	1-214-163-00	METAL	20K 1% 1/4W	R113	1-214-156-00	METAL	10K 1% 1/4W
R61	1-249-425-11	CARBON	4.7K 5% 1/6W	R114	1-214-140-00	METAL	2.2K 1% 1/4W
R62	1-214-156-00	METAL	10K 1% 1/4W	R115	1-214-132-00	METAL	1K 1% 1/4W
R63	1-214-180-00	METAL	100K 1% 1/4W	R116	1-214-180-00	METAL	100K 1% 1/4W
R64	1-214-156-00	METAL	10K 1% 1/4W	R117	1-247-843-00	CARBON	3.3K 5% 1/6W
R65	1-214-132-00	METAL	1K 1% 1/4W	R118	1-214-180-00	METAL	100K 1% 1/4W
R66	1-214-140-00	METAL	2.2K 1% 1/4W	R119	1-214-127-00	METAL	620 1% 1/4W
R67	1-214-180-00	METAL	100K 1% 1/4W	R120	1-214-156-00	METAL	10K 1% 1/4W
R68	1-214-141-00	METAL	2.4K 1% 1/4W	R121	1-214-156-00	METAL	10K 1% 1/4W
R69	1-214-156-00	METAL	10K 1% 1/4W	R122	1-214-108-00	METAL	100 1% 1/4W
R70	1-214-156-00	METAL	10K 1% 1/4W	R123	1-214-108-00	METAL	100 1% 1/4W
R71	1-214-108-00	METAL	100 1% 1/4W	R124	1-214-156-00	METAL	10K 1% 1/4W
R72	1-214-108-00	METAL	100 1% 1/4W	R125	1-249-425-11	CARBON	4.7K 5% 1/6W
R73	1-214-156-00	METAL	10K 1% 1/4W	R126	1-214-156-00	METAL	10K 1% 1/4W
R74	1-247-840-00	CARBON	2.4K 5% 1/6W	R127	1-249-425-11	CARBON	4.7K 5% 1/6W
R75	1-249-425-11	CARBON	4.7K 5% 1/6W	R128	1-247-862-00	CARBON	20K 5% 1/6W
R76	1-249-425-11	CARBON	4.7K 5% 1/6W	R129	1-214-160-00	METAL	15K 1% 1/4W
R77	1-214-156-00	METAL	10K 1% 1/4W	VARIABLE RESISTOR			
R78	1-214-156-00	METAL	10K 1% 1/4W				
R79	1-249-429-11	CARBON	10K 5% 1/6W	RV1	1-224-921-11	RES, ADJ, METAL FILM 20K	

DC

DD

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
RV2	1-224-920-00	RES, ADJ, METAL FILM 10K		C38	1-123-356-00	ELECT 10MF 20% 16V	
RV3	1-224-920-00	RES, ADJ, METAL FILM 10K		C39	1-101-004-00	CERAMIC 0.01MF 50V	
RV4	1-224-919-00	RES, ADJ, METAL FILM 5K		C40	1-101-004-00	CERAMIC 0.01MF 50V	
RV5	1-224-921-11	RES, ADJ, METAL FILM 20K		C41	1-101-004-00	CERAMIC 0.01MF 50V	
RV6	1-224-943-00	RES, ADJ, CERMET 100K					
						DIODE	
RV7	1-224-940-00	RES, ADJ, CERMET 10K		D1	8-719-815-55	DIODE 1S1555	
RV8	1-224-921-11	RES, ADJ, METAL FILM 20K		D2	8-719-815-55	DIODE 1S1555	
RV9	1-224-921-11	RES, ADJ, METAL FILM 20K		D3	8-719-815-55	DIODE 1S1555	
RV10	1-224-921-11	RES, ADJ, METAL FILM 20K		D4	8-719-815-55	DIODE 1S1555	
RV11	1-224-921-11	RES, ADJ, METAL FILM 20K		D5	8-719-815-55	DIODE 1S1555	
RV12	1-224-921-11	RES, ADJ, METAL FILM 20K		D6	8-719-815-55	DIODE 1S1555	
RV13	1-224-921-11	RES, ADJ, METAL FILM 20K				CONNECTOR	
RV14	1-224-922-00	RES, ADJ, METAL FILM 50K		DD1	*1-561-796-00	SOCKET, CONNECTOR 15P	
RV15	1-224-920-00	RES, ADJ, METAL FILM 10K		DD2	*1-561-796-00	SOCKET, CONNECTOR 22P	
RV16	1-224-921-11	RES, ADJ, METAL FILM 20K					
RV18	1-224-921-11	RES, ADJ, METAL FILM 20K				IC	
*****				IC1	8-759-729-03	IC NJM2903D	
*****				IC2	8-759-115-55	IC UPC1555C	
*****				IC3	8-759-240-53	IC TC4053BP	
*****				IC4	8-759-240-53	IC TC4053BP	
*****						COIL	
*****				L1	1-408-247-00	MICRO INDUCTOR 33MMH	
*****						TRANSISTOR	
*****				Q1	8-729-600-27	TRANSISTOR 2SC634SP	
*****				Q2	8-729-600-27	TRANSISTOR 2SC634SP	
*****				Q3	8-729-384-48	TRANSISTOR 2SA844	
*****				Q4	8-729-603-50	TRANSISTOR 2SC403SP	
*****				Q5	8-729-177-32	TRANSISTOR 2SD773	
*****						RESISTOR	
*****				R1	1-249-429-11	CARBON 10K 5% 1/6W	
*****				R2	1-214-151-00	METAL 6.2K 1% 1/4W	
*****				R3	1-214-180-00	METAL 100K 1% 1/4W	
*****				R4	1-214-151-00	METAL 6.2K 1% 1/4W	
*****				R5	1-214-180-00	METAL 100K 1% 1/4W	
*****				R6	1-214-151-00	METAL 6.2K 1% 1/4W	
*****				R7	1-214-151-00	METAL 6.2K 1% 1/4W	
*****				R8	1-249-429-11	CARBON 10K 5% 1/6W	
*****				R9	1-214-151-00	METAL 6.2K 1% 1/4W	
*****				R10	1-214-180-00	METAL 100K 1% 1/4W	
*****				R11	1-214-151-00	METAL 6.2K 1% 1/4W	
*****				R12	1-214-180-00	METAL 100K 1% 1/4W	
*****				R13	1-214-151-00	METAL 6.2K 1% 1/4W	
*****				R14	1-214-151-00	METAL 6.2K 1% 1/4W	
*****				R15	1-249-429-11	CARBON 10K 5% 1/6W	
*****				R16	1-214-151-00	METAL 6.2K 1% 1/4W	
*****				R17	1-214-180-00	METAL 100K 1% 1/4W	
*****				R18	1-214-151-00	METAL 6.2K 1% 1/4W	
*****				R19	1-214-180-00	METAL 100K 1% 1/4W	

*A-1345-367-A DD BOARD, COMPLETE

CAPACITOR

C1	1-101-004-00	CERAMIC	0.01MF	50V
C2	1-101-004-00	CERAMIC	0.01MF	50V
C4	1-101-004-00	CERAMIC	0.01MF	50V
C5	1-101-004-00	CERAMIC	0.01MF	50V
C7	1-101-004-00	CERAMIC	0.01MF	50V
C8	1-101-004-00	CERAMIC	0.01MF	50V
C10	1-101-004-00	CERAMIC	0.01MF	50V
C11	1-101-004-00	CERAMIC	0.01MF	50V
C12	1-102-820-00	CERAMIC	330PF	5% 50V
C13	1-101-004-00	CERAMIC	0.01MF	50V
C14	1-102-531-00	CERAMIC	150PF	5% 50V
C15	1-102-531-00	CERAMIC	150PF	5% 50V
C16	1-101-004-00	CERAMIC	0.01MF	50V
C17	1-130-203-00	FILM	0.01MF	5% 50V
C18	1-102-978-00	CERAMIC	220PF	5% 50V
C20	1-101-004-00	CERAMIC	0.01MF	50V
C21	1-101-004-00	CERAMIC	0.01MF	50V
C22	1-101-004-00	CERAMIC	0.01MF	50V
C24	1-101-004-00	CERAMIC	0.01MF	50V
C25	1-101-004-00	CERAMIC	0.01MF	50V
C26	1-123-318-00	ELECT	33MF	20% 16V
C27	1-123-318-00	ELECT	33MF	20% 16V
C29	1-123-318-00	ELECT	33MF	20% 16V
C30	1-123-318-00	ELECT	33MF	20% 16V
C31	1-123-318-00	ELECT	33MF	20% 16V
C32	1-123-318-00	ELECT	33MF	20% 16V
C33	1-123-318-00	ELECT	33MF	20% 16V
C34	1-123-306-00	ELECT	47MF	20% 10V
C35	1-123-306-00	ELECT	47MF	20% 10V
C37	1-123-356-00	ELECT	10MF	20% 16V

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R20	1-214-151-00	METAL	6.2K 1% 1/4W	VARIABLE RESISTOR			
R21	1-214-151-00	METAL	6.2K 1% 1/4W	RV1	1-224-921-11	RES, ADJ, METAL FILM 20K	
R22	1-214-132-00	METAL	1K 1% 1/4W	RV2	1-224-941-00	RES, ADJ, CERMET 20K	
R23	1-214-132-00	METAL	1K 1% 1/4W	RV3	1-224-921-11	RES, ADJ, METAL FILM 20K	
R24	1-247-848-00	CARBON	5.1K 5% 1/6W	RV4	1-224-941-00	RES, ADJ, CERMET 20K	
R25	1-214-165-00	METAL	24K 1% 1/4W	RV5	1-224-921-11	RES, ADJ, METAL FILM 20K	
R26	1-213-163-00	METAL OXIDE	47K 5% 1W	F	RV6	1-224-921-11	RES, ADJ, METAL FILM 20K
R27	1-214-172-00	METAL	5.6K 1% 1/4W	RV7	1-224-921-11	RES, ADJ, METAL FILM 20K	
R28	1-214-160-00	METAL	15K 1% 1/4W	RV8	1-224-941-00	RES, ADJ, CERMET 20K	
R29	1-214-140-00	METAL	2.2K 1% 1/4W	RV9	1-224-921-11	RES, ADJ, METAL FILM 20K	
R30	1-214-141-00	METAL	2.4K 1% 1/4W	RV10	1-224-941-00	RES, ADJ, CERMET 20K	
R31	1-214-156-00	METAL	10K 1% 1/4W	RV11	1-224-921-11	RES, ADJ, METAL FILM 20K	
R32	1-214-141-00	METAL	47K 1% 1/4W	RV12	1-224-921-11	RES, ADJ, METAL FILM 20K	
R33	1-214-144-00	METAL	3.3K 1% 1/4W	RV13	1-224-921-11	RES, ADJ, METAL FILM 20K	
R34	1-214-158-00	METAL	12K 1% 1/4W	RV14	1-224-941-00	RES, ADJ, CERMET 20K	
R35	1-249-429-11	CARBON	10K 5% 1/6W	RV15	1-224-921-11	RES, ADJ, METAL FILM 20K	
R37	1-214-140-00	METAL	2.2K 1% 1/4W	RV16	1-224-941-00	RES, ADJ, CERMET 20K	
R38	1-214-141-00	METAL	2.4K 1% 1/4W	RV17	1-224-921-11	RES, ADJ, METAL FILM 20K	
R39	1-214-140-00	METAL	2.2K 1% 1/4W	RV18	1-224-921-11	RES, ADJ, METAL FILM 20K	
R40	1-214-120-00	METAL	330 1% 1/4W	RV19	1-224-921-11	RES, ADJ, METAL FILM 20K	
R41	1-249-429-11	CARBON	10K 5% 1/6W	RV20	1-224-921-11	RES, ADJ, METAL FILM 20K	
R42	1-249-425-11	CARBON	4.7K 5% 1/6W	RV21	1-224-920-00	RES, ADJ, METAL FILM 10K	
R43	1-214-132-00	METAL	1K 1% 1/4W	RV22	1-224-917-00	RES, ADJ, METAL FILM 1K	
R44	1-213-151-11	METAL OXIDE	4.7K 5% 1W	RV23	1-224-923-00	RES, ADJ, METAL FILM 100K	
R45	1-247-807-00	CARBON	100 5% 1/6W	RV24	1-224-917-00	RES, ADJ, METAL FILM 1K	
R46	1-249-429-11	CARBON	10K 5% 1/6W	RV25	1-224-920-00	RES, ADJ, METAL FILM 10K	
R47	1-249-429-11	CARBON	10K 5% 1/6W	RV26	1-224-921-11	RES, ADJ, METAL FILM 20K	
R48	1-249-429-11	CARBON	10K 5% 1/6W	RV27	1-224-920-00	RES, ADJ, METAL FILM 10K	
R49	1-249-429-11	CARBON	10K 5% 1/6W	SWITCH			
R50	1-247-848-00	CARBON	5.1K 5% 1/6W	SW1	1-552-898-00	SWITCH, TOGGLE	
R51	1-214-132-00	METAL	1K 1% 1/4W	SW2	1-552-898-00	SWITCH, TOGGLE	
R52	1-214-156-00	METAL	10K 1% 1/4W	SW3	1-552-898-00	SWITCH, TOGGLE	
R53	1-214-156-00	METAL	10K 1% 1/4W	SW4	1-552-898-00	SWITCH, TOGGLE	
R54	1-214-156-00	METAL	10K 1% 1/4W	SW6	1-552-898-00	SWITCH, TOGGLE	
R55	1-214-156-00	METAL	10K 1% 1/4W	SW7	1-552-898-00	SWITCH, TOGGLE	
R56	1-214-156-00	METAL	10K 1% 1/4W	SW8	1-552-898-00	SWITCH, TOGGLE	
R57	1-214-156-00	METAL	10K 1% 1/4W	SW9	1-552-898-00	SWITCH, TOGGLE	
R58	1-214-156-00	METAL	10K 1% 1/4W	SW10	1-552-898-00	SWITCH, TOGGLE	
R59	1-214-156-00	METAL	10K 1% 1/4W	SW11	1-552-898-00	SWITCH, TOGGLE	
R60	1-214-156-00	METAL	10K 1% 1/4W	SW12	1-552-898-00	SWITCH, TOGGLE	
R61	1-214-156-00	METAL	10K 1% 1/4W	THERMISTOR			
R62	1-214-156-00	METAL	10K 1% 1/4W	TH1	1-800-202-XX	THERMISTOR S-10K	
R63	1-214-156-00	METAL	10K 1% 1/4W	*****			
R66	1-247-848-00	CARBON	5.1K 5% 1/6W	*1-605-855-00 Y BOARD			
R67	1-247-862-00	CARBON	20K 5% 1/6W	*****			
R68	1-247-848-00	CARBON	5.1K 5% 1/6W	DIODE			
R69	1-247-879-00	CARBON	100K 5% 1/6W	D1	8-719-921-55	DIODE SLP155B	
R70	1-214-132-00	METAL	1K 1% 1/4W				
R71	1-214-165-00	METAL	24K 1% 1/4W				
R72	1-214-132-00	METAL	1K 1% 1/4W				
R73	1-214-169-00	METAL	36K 1% 1/4W				
R74	1-214-084-00	METAL	10 1% 1/4W				

Y H JA JB TA TC

Ref.No. Part No. Description Remark

D2 8-719-909-20 DIODE GL-9NG2

*1-605-845-00 H BOARD

CAPACITOR

Ref.No.	Part No.	Description	Value	Remark
C1	1-101-006-21	CERAMIC	0.047MF	50V
C2	1-101-006-21	CERAMIC	0.047MF	50V
C3	1-101-006-21	CERAMIC	0.047MF	50V
C4	1-101-006-21	CERAMIC	0.047MF	50V

CONNECTOR

H1 *1-508-744-00 PIN, CONNECTOR 10P

RESISTOR

Ref.No.	Part No.	Description	Value	Remark
R1	1-214-174-00	METAL	56K 1% 1/4W	
R2	1-214-156-00	METAL	10K 1% 1/4W	
R3	1-214-178-00	METAL	82K 1% 1/4W	
R4	1-214-180-00	METAL	100K 1% 1/4W	
R5	1-214-132-00	METAL	1K 1% 1/4W	
R6	1-214-180-00	METAL	100K 1% 1/4W	
R7	1-214-132-00	METAL	1K 1% 1/4W	
R8	1-214-132-00	METAL	1K 1% 1/4W	

VARIABLE RESISTOR

Ref.No.	Part No.	Description	Value	Remark
RV1	1-228-444-00	RES, VAR, CARBON (WITH SW)	10K	
RV2	1-224-920-00	RES, ADJ, METAL FILM	10K	
RV3	1-228-445-00	RES, VAR, CARBON (WITH SW)	20K	
RV4	1-224-921-11	RES, ADJ, METAL FILM	20K	
RV5	1-228-445-00	RES, VAR, CARBON (WITH SW)	20K	
RV6	1-224-921-11	RES, ADJ, METAL FILM	20K	
RV7	1-228-445-00	RES, VAR, CARBON (WITH SW)	20K	
RV8	1-224-921-11	RES, ADJ, METAL FILM	20K	
RV9	1-228-445-00	RES, VAR, CARBON (WITH SW)	20K	

*1-605-846-00 JA BOARD

CONNECTOR

Ref.No.	Part No.	Description
JA1	*1-508-743-00	PIN, CONNECTOR 5P
JA2	*1-508-797-31	PIN, CONNECTOR 4P

RESISTOR

Ref.No.	Part No.	Description	Value	Remark
R1	1-249-429-11	CARBON	10K 5% 1/6W	
R2	1-249-429-11	CARBON	10K 5% 1/6W	

SWITCH

Ref.No.	Part No.	Description
S1	1-552-267-00	SWITCH, LEVER SLIDE
S2	1-552-897-00	SWITCH, LEVER
S3	1-553-582-00	SWITCH, LEVER SLIDE

Ref.No. Part No. Description Remark

*1-605-847-00 JB BOARD

CONNECTOR

Ref.No.	Part No.	Description
JB1	*1-508-743-00	PIN, CONNECTOR 5P
JB2	*1-508-797-31	PIN, CONNECTOR 4P

SWITCH

Ref.No.	Part No.	Description
S1	1-552-897-00	SWITCH, LEVER
S2	1-552-897-00	SWITCH, LEVER
S3	1-552-897-00	SWITCH, LEVER
S4	1-552-897-00	SWITCH, LEVER
S5	1-552-897-00	SWITCH, LEVER
S6	1-552-897-00	SWITCH, LEVER

*1-605-851-00 TA BOARD

DIODE

Ref.No.	Part No.	Description
D1	8-719-815-55	DIODE 1S1555
D2	8-719-815-55	DIODE 1S1555

RESISTOR

Ref.No.	Part No.	Description	Value	Remark
R1	1-247-133-00	CARBON	1.2K 5% 1/4W	
R2	1-249-469-11	CARBON	100K 5% 1/4W	

CONNECTOR

Ref.No.	Part No.	Description
TA1	*1-560-692-00	PLUG, CONNECTOR 15P
TA2	*1-560-692-21	PLUG, CONNECTOR 22P
TA3	*1-560-692-00	PLUG, CONNECTOR 15P
TA4	*1-560-692-21	PLUG, CONNECTOR 22P
TA5	*1-560-692-00	PLUG, CONNECTOR 15P
TA6	*1-560-692-21	PLUG, CONNECTOR 22P
TA7	*1-560-692-00	PLUG, CONNECTOR 15P
TA8	*1-560-692-21	PLUG, CONNECTOR 22P
TA9	*1-508-743-00	PIN, CONNECTOR 5P
TA10	*1-508-797-31	PIN, CONNECTOR 4P
TA11	*1-508-744-00	PIN, CONNECTOR 10P
TA12	*1-508-743-00	PIN, CONNECTOR 5P
TA13	*1-508-797-31	PIN, CONNECTOR 4P
TA14	*1-508-742-00	PIN, CONNECTOR 3P
TA15	*1-508-796-21	PIN, CONNECTOR 2P

*1-617-866-11 TC BOARD

DIODE

Ref.No.	Part No.	Description
D1	8-719-911-19	DIODE 1SS119
D2	8-719-911-19	DIODE 1SS119

TC	TB	W	WB	BB
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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
<u>SWITCH</u>				TB20	*1-508-796-21	PIN, CONNECTOR 2P	
SW1	1-554-724-11	SWITCH, PUSH (1 KEY)		TB21	*1-508-796-00	PIN, CONNECTOR 2P	
SW2	1-554-724-11	SWITCH, PUSH (1 KEY)		TB22	*1-508-796-00	PIN, CONNECTOR 2P	
SW3	1-554-724-11	SWITCH, PUSH (1 KEY)		TB23	*1-508-796-00	PIN, CONNECTOR 2P	
SW4	1-554-724-11	SWITCH, PUSH (1 KEY)		TB24	*1-560-456-00	PIN, CONNECTOR 2P	
SW5	1-554-724-11	SWITCH, PUSH (1 KEY)		TB25	*1-560-456-00	PIN, CONNECTOR 2P	
SW6	1-552-898-00	SWITCH, TOGGLE		TB26	*1-560-456-00	PIN, CONNECTOR 2P	
SW7	1-552-898-00	SWITCH, TOGGLE		TB27	*1-560-456-00	PIN, CONNECTOR 2P	
<u>CONNECTOR</u>				TB28	*1-560-456-00	PIN, CONNECTOR 2P	
TC1	*1-564-448-11	PLUG, CONNECTOR (2.5MM) 12P		TB29	*1-508-796-00	PIN, CONNECTOR 2P	
TC2	*1-564-446-11	PLUG, CONNECTOR (2.5MM) 10P		TB30	*1-508-796-21	PIN, CONNECTOR 2P	
TC3	*1-564-448-11	PLUG, CONNECTOR (2.5MM) 12P		TB31	*1-508-796-21	PIN, CONNECTOR 2P	
*****				TB32	*1-508-796-00	PIN, CONNECTOR 2P	
	*1-617-865-11	TB BOARD		TB33	*1-508-797-00	PIN, CONNECTOR 4P	
		*****		TB34	*1-508-797-00	PIN, CONNECTOR 4P	
<u>CAPACITOR</u>				TB35	*1-508-797-00	PIN, CONNECTOR 4P	
C1	1-101-004-00	CERAMIC 0.01MF	50V	TB41	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
C2	1-101-004-00	CERAMIC 0.01MF	50V	TB42	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
C3	1-101-004-00	CERAMIC 0.01MF	50V	TB43	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
C4	1-101-004-00	CERAMIC 0.01MF	50V	TB44	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
C5	1-101-004-00	CERAMIC 0.01MF	50V	TB45	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
C6	1-101-004-00	CERAMIC 0.01MF	50V	TB46	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
C7	1-101-004-00	CERAMIC 0.01MF	50V	TB47	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
C8	1-101-004-00	CERAMIC 0.01MF	50V	TB48	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
C9	1-123-356-00	ELECT 10MF	20% 16V	TB49	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
C10	1-123-356-00	ELECT 10MF	20% 16V	TB50	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
<u>RESISTOR</u>				TB51	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
R1	1-247-831-00	CARBON 1K 5% 1/6W		TB52	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
<u>CONNECTOR</u>				TB53	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
TB1	*1-508-797-00	PIN, CONNECTOR 4P		TB54	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
TB2	*1-508-797-31	PIN, CONNECTOR 4P		TB55	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
TB3	*1-508-797-31	PIN, CONNECTOR 4P		TB56	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
TB4	*1-508-797-00	PIN, CONNECTOR 4P		TB57	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
TB5	*1-508-743-00	PIN, CONNECTOR 5P		TB58	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
TB6	*1-508-743-00	PIN, CONNECTOR 5P		TB59	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
TB7	*1-508-743-00	PIN, CONNECTOR 5P		TB60	*1-561-797-00	SOCKET, MULTI CONNECTOR 15P	
TB8	*1-508-796-00	PIN, CONNECTOR 2P		TB101	*1-508-797-00	PIN, CONNECTOR 4P	
TB9	*1-508-796-00	PIN, CONNECTOR 2P		TB102	*1-508-797-31	PIN, CONNECTOR 4P	
TB10	*1-508-743-00	PIN, CONNECTOR 5P		TB103	*1-564-446-11	PLUG, CONNECTOR (2.5MM) 10P	
TB11	*1-508-743-00	PIN, CONNECTOR 5P		TB104	*1-564-448-11	PLUG, CONNECTOR (2.5MM) 12P	
TB12	*1-508-742-00	PIN, CONNECTOR 3P		*****			
TB13	*1-508-743-00	PIN, CONNECTOR 5P			*1-600-345-00	W BOARD	
TB14	*1-508-743-00	PIN, CONNECTOR 5P				*****	
TB15	*1-508-797-00	PIN, CONNECTOR 4P			*1-605-853-00	WB BOARD	
TB16	*1-508-797-31	PIN, CONNECTOR 4P				*****	
TB17	*1-508-743-00	PIN, CONNECTOR 5P		WB1	*1-560-455-00	PIN, CONNECTOR 2P	
TB18	*1-508-796-00	PIN, CONNECTOR 2P		WB2	*1-560-455-00	PIN, CONNECTOR 2P	

					*1-617-867-11	BB BOARD	

WC

Ref.No. Part No. Description Remark

*1-605-853-00 WC BOARD

RESISTOR

R1	1-212-506-11	METAL	75	1%	1/2W
R2	1-212-506-11	METAL	75	1%	1/2W

CONNECTOR

WC1	*1-560-455-00	PIN, CONNECTOR2P
WC2	*1-560-455-00	PIN, CONNECTOR2P

MISCELLANEOUS

ASSY, CONNCTOR 12P

△	1-228-516-11	RESISTOR ASSY, HIGH-VOLTAGE
	1-452-032-00	MAGNET, DISK; 10MM Ø
	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM Ø
△	1-453-091-11	HIGH-VOLTAGE DC BLOCK
	1-509-131-11	CONNECTOR, BNC

	1-509-437-00	SOCKET, POWER TRANSISTOR
△	1-526-572-11	SOCKET, POWER VOLTAGE SELECT
	1-533-148-00	HOLDER, FUSE
*1-551-720-00	CONNECTOR ASSY (2.5MM) 3P	
*1-551-721-00	CONNECTOR ASSY (2.5MM) 3P	
*1-551-727-00	CONNECTOR (2.5MM) 8P	
*1-551-809-00	CONNECTOR 2P	

*1-551-813-00	CONNECTOR ASSY (2.5MM) 10P
*1-551-989-00	CONNECTOR ASSY 5P
*1-555-499-00	CONNECTOR ASSY (2.5MM) 4P
*1-555-946-00	CONNECTOR ASSY, MINIATURE 5P
*1-555-973-00	CONNECTOR ASSY (LARGE) 4P

*1-556-008-00	CONNECTOR (2.5MM) 2P
*1-556-025-00	CONNECTOR ASSY, MINIATURE 4P
*1-556-056-00	CONNECTOR ASSY (LARGE) 3P
*1-556-099-00	CONNECTOR ASSY (L) 2P
*1-556-141-00	CONNECTOR ASSY, MINIATURE 3P
*1-560-455-00	PIN, CONNECTOR 2P
*1-937-030-11	HARNESS (TB)

C1	1-102-851-00	CAP, CERAMIC 15PF CH	5%	50V
C2	1-102-050-00	CAP, CERAMIC 10000PF		500V
C3	1-102-851-00	CAP, CERAMIC 15PF CH	5%	50V
C4	1-102-050-00	CAP, CERAMIC 10000PF		500V
C5	1-102-851-00	CAP, CERAMIC 15PF CH	5%	50V
C6	1-102-050-00	CAP, CERAMIC 10000PF		500V
C7	1-102-851-00	CAP, CERAMIC 15PF CH	5%	50V
C8	1-102-050-00	CAP, CERAMIC 10000PF		500V
C9	1-102-851-00	CAP, CERAMIC 15PF CH	5%	50V
C10	1-102-050-00	CAP, CERAMIC 10000PF		500V

Ref.No. Part No. Description Remark

C11	1-102-851-00	CAP, CERAMIC 15PF CH	5%	50V
C12	1-102-050-00	CAP, CERAMIC 10000PF		500V
C13	1-102-851-00	CAP, CERAMIC 15PF CH	5%	50V
C14	1-102-050-00	CAP, CERAMIC 10000PF		500V
C901	1-130-031-00	CAP, METALIZED PP 0.22MF	5%	400V
C902	1-130-031-00	CAP, METALIZED PP 0.22MF		400V
C903	1-130-099-00	CAP, M.PP FILM 0.005MF	3%	2KV

CNJ901 1-508-382-00 CONNECTOR (10P)

CNP901	△	1-509-546-11	3P INLET
F901	△	1-532-286-11	FUSE, TIME-LAG 2.5A/250V
L901	△	1-451-211-12	DEFLECTION YOKE (SY-112)
L902	△	1-451-211-12	DEFLECTION YOKE (SY-112)
L903	△	1-426-087-21	COIL, DEGAUSSING
L904	△	1-452-262-11	CRT NECK ASSY (361)

L905	△	1-452-261-11	CRT NECK ASSY (362)
PT901	△	1-447-219-11	TRANSFORMER, POWER
PT902	△	1-447-220-11	TRANSFORMER, POWER

Q901	8-729-311-42	TRANSISTOR 2SC1114
Q902	8-729-311-42	TRANSISTOR 2SC1114
Q903	8-729-311-42	TRANSISTOR 2SC1114
Q904	8-729-311-42	TRANSISTOR 2SC1114

R901 △ 1-206-680-11 RES, METAL OXIDE FILM 4.70K 5% 2W

R902	△	1-206-680-11	RES, METAL OXIDE FILM 4.70K 5% 2W
R903		1-217-183-00	RES, WIREWOUND 2.7 10% 15W

S901	△	1-552-895-11	SWITCH, PUSH POWER
S902	△	1-552-896-11	SWITCH, PUSH DEGAUSS
T901	△	1-439-284-11	TRANSFORMER ASSY, FLYBACK
V901	△	8-733-051-05	CRT (520UB22)

ACCESSORIES AND PACKING MATERIALS

Part No. Description Remark

X-4353-706-0	BASE ASSY, BOTTOM	
△	1-532-286-11	FUSE, TIME-LAG 2.5A/250V
△	1-532-299-11	FUSE, TIME-LAG 5A/250V
△	1-534-819-14	POWER CORD
1-560-776-00	SOCKET, CONNECTOR 10P	
4-335-988-00	LABEL (B), VOLTAGE INDICATION	
4-337-207-00	CARTON, ACCESSORY	
*4-337-214-00	NUT, PLATE	
4-337-844-00	BAG, PROTECTION	
4-353-737-00	PLATE, NUMBER, TALLY	

4-353-775-00	CUSHION (LOWER)
4-353-776-00	CUSHION (UPPER)
*4-379-009-01	INDIVIDUAL CARTON
4-491-586-01	INSTRUCTION, APPROVAL, PTB
4-491-798-21	INSTRUCTION, CAUTION

7-700-731-03 DRIVER, VR ADJUSTMENT

The components identified by shading and mark △ are critical for safety. Replace only with part number specified.

